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Parental Substance Use and Foster Care Entrance: Trends, Geographic Variation, and Predictors of Reunification

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Dedication

To my parents, who instilled in me a lifelong love of learning

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Abstract

Parental Substance Use and Foster Care Entrance: Trends, Geographic Variation, and Predictors of Reunification

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Parental substance use is a major risk factor for a child's entrance into foster care and, in the context of the opioid epidemic, has contributed to an increasing proportion of foster care entrances. However, parental substance use exists on a spectrum of severity and risk to a child's safety and well-being. Whether or not a child with substance-using parent(s) is removed to foster care and returns to their parents' home following foster care depends on the extent to which professionals, caseworkers, judges, and other authorities perceive parental substance use as maltreatment and whether it can be reconciled with a child's safety and wellbeing. Decision-making in the child welfare system largely depends on the personal judgments of caseworkers, judges, and other child welfare workers, which are in turn influenced by external factors varying over time and place. Regarding time, the primary narrative regarding substance abuse has shifted dramatically from one emphasizing criminality and the need for punishment during the 1980s crack cocaine epidemic to one emphasizing public health and the need for treatment during the current opioid crisis. How this new narrative is reflected in child welfare decision-making, however, has not been adequately explored. Regarding place,

the policies, availability of services, and more general sociodemographic and health environment of counties and states are known factors in child welfare decision-making, but have yet to be applied specifically to cases involving parental substance use. This dissertation links data from the Adoption and Foster Care Analysis and Reporting System with various county- and state-level data sources to address these gaps in the literature. The first study shows how sociodemographic variation in substance use-associated foster care entry rates over time reveal changes in where and for whom the child welfare system allocates resources. The second study demonstrates how county-level policy, health, and sociodemographic characteristics explain geographic variation in these rates. In the third study, I show how Medicaid expansion and program generosity interact in nuanced ways to predict reunification among children removed from the home due to parental substance use. All three studies illustrate the ongoing connections between the opioid epidemic and child welfare.

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Chapter 1: Introduction

As a discipline, sociology has long been concerned with how the family shapes children's wellbeing and socioeconomic life chances, as well as how larger social structures shape how the family functions as an institution. The foster care system, and the child welfare system more broadly, represent an important topic of study for family sociologists. After all, entrance into the foster care system likely represents a significant breakdown in family functioning, and time spent in foster care has long-term implications for both the child and caregivers' health and socioeconomic achievement. In recent years, an increasing number of children have entered foster care due to their parents' substance use (Meinhofer & Angleró-Díaz, 2019), reflecting the spillover effects of the opioid epidemic on family wellbeing. However, how the link between parental substance use and foster care entry varies by time and place has not been adequately examined. Furthermore, children who enter foster care due to parental substance use are less likely to reunify with their parents (Brook et al., 2010; Lloyd, Akin, & Brook, 2017), but what factors may facilitate reunification among these families remains unclear. This dissertation analyzes historical and geographic variation in the trends of foster care entry and exit across diverse groups among children whose parent(s) use substances to illustrate how caseworker and other authorities' understandings of parental substance use as child maltreatment have evolved over time and vary from place to place. A better understanding of these issues can guide programmatic and policy efforts to improve the health and wellbeing of these vulnerable families before and after intervention by the child welfare system.

This study understands child maltreatment, the precursor to foster care entry, as a social construction (Pfohl, 1977) whose definition is contested by state agencies, child welfare workers, courts, healthcare professionals, and caregivers themselves. Whether

parental substance use results in foster care entry, and whether children who enter foster care due to parental substance use can reunify with their parents, depends on a series of decisions made by professionals both inside and outside the child welfare system. The caseworkers and judges who make these decisions are subject to their individual own biases, beliefs, and attitudes, which in turn are shaped by larger external factors. This dissertation considers how the decision-making processes linking parental substance use, foster care entry, and reunification may be contextualized within time and place. First, whether a caregiver's substance use is defined as child maltreatment depends in part on how that caregiver fits into the prevailing narrative regarding substance use, which has shifted from substance use as a criminal act deserving punishment for some groups (e.g., Black crack cocaine users in the 1980s) to a public health issue deserving treatment for others (e.g., white opioid users in today's epidemic) (Shachar et al., 2020). Second, whether a caregiver's substance use becomes problematic enough to be identified as child maltreatment, and whether their substance use can be addressed, depends on how both their social and geographic location translate into healthcare access. Third, states function as institutional actors (Montez, Hayward, & Zajacova, 2019) whose policies shape child welfare outcomes among caregivers with a substance use disorder and their children.

In this chapter, I provide an introduction to foster care in the United States, the effects of parental substance use on children, and how parental substance use leads to involvement with the child welfare system. I then explain the processes leading to a child's placement in foster care in order to illustrate the decision points in which the association between parental substance use and system involvement may vary. Next, I present a brief historical overview of the child welfare system in order to contextualize why these decision points exist and why these associations differ by time, place, and caseworker discretion. The goal of these introductory sections is to illustrate how

historical context and current policy – macro-level factors which are mediated through the decision-making processes of individual caseworkers, healthcare professionals, and judges (Lipsky, 1980) – produce variation in the links between parental substance use, foster care, and reunification in ways that often reproduce wider racial and class inequalities.

The following chapters add to the literature on system-involved families with substance use issues by examining disparities at multiple decision points (e.g., removal and reunification) and at multiple levels of a family's ecology (e.g., child, case history, county, and state; Bronfenbrenner, 1979). Chapter 2 presents trends in the rates of substance use-associated foster care entry and the proportion of total foster care entries attributable to parental substance use by race/ethnicity, age, and level of urbanization. In this chapter, I discuss how these trends reflect both the changing demography of substance use in the United States as well as changes in who is served (or not) by the child welfare system. Chapter 3 examines how state policy and county-level health and sociodemographic characteristics contribute to geographic variation in the growth in foster care caseloads associated with parental substance use. This chapter extends arguments made in Chapter 2 by considering how macro-level factors shape which caregivers with substance use disorders come into contact with the foster care system and where. Chapter 4 switches from the previous chapters' focus on who enters the foster care system to a focus on which of these children exit the foster care system and return to their parents' home. Specifically, I examine how variation in states' healthcare policy contributes to the likelihood of reunification among these families. Lastly, Chapter 5 concludes with a discussion of the cross-cutting themes that emerged from the previous chapters and recommendations for policy and practice.

FOSTER CARE AND PARENTAL SUBSTANCE USE AS SOURCES OF INEQUALITY

The challenges and opportunities of the foster care system are not strictly defined by parental substance use, and parental substance matters to children, parents, and society in ways that do not always involve the foster care system. Yet, these two subjects of intense scholarly and public attention are highly relevant to each other. A good starting point, therefore, is to provide an overview of each before turning to their intersection.

Foster Care in the United States

The term foster care refers to substitute care for a child who has been removed from their home by a child welfare or law enforcement agency. The most common foster care settings are traditional non-relative foster homes and relative foster family homes, also known as kinship care. In 2019, 672,594 youth were served by the public foster care system (U.S. Department of Health & Human Services, 2020), or approximately 0.79% of the population ages 0-20 (U.S. Census Bureau, 2020). Although the foster care system only serves a small percentage of the total child population at any given time, the extent of children's involvement with the foster care system is much greater when considering the entire life course. By age 18, 5.91% of children in the United States can be expected to have entered foster care at some point during childhood (Wildeman & Emanuel, 2014).

Youth in foster care are a vulnerable group who disproportionately experience mental and physical health challenges compared to the general child population, including greater rates of depression and anxiety, developmental delays, learning disabilities, and behavioral problems (Turney & Wildeman, 2016). Children in or adopted from foster care also have much higher rates of adverse childhood experiences (Turney & Wildeman, 2017) which, in turn, are linked to a host of poor mental and physical health outcomes across the life course, including substance use (Dube et al. 2003), depression (Chapman et al., 2004), attempted suicide (Dube et al., 2001), greater allostatic load

(Danese & McEwen, 2012), and chronic disease (Dong et al., 2003). Former foster care youth also have greater rates of high school dropout (Clemens et al., 2017) and lower rates of postsecondary enrollment and graduation (Randolph & Thompson, 2017), educational gaps which set the stage for lower socioeconomic attainment across the life course. They are more likely to be unemployed and have lower earnings compared to their peers (Hook & Courtney, 2011). This socioeconomic attainment is hindered in part by a greater risk of incarceration (Jonson-Reid & Barth, 2000) among men formerly in foster care, and both a greater risk of criminal justice involvement (Jung & LaLonde, 2016) as well as teenage pregnancy (Dworsky & Courtney, 2010) for women formerly in foster care. Regardless of whether these adverse outcomes are due to selection factors (e.g., the maltreatment preceding foster care placement) or the experience of foster care itself (Doyle Jr., 2008; Berger et al., 2015), current and former foster care youth are an at-risk population in need of additional support, particularly during the transition to adulthood.

These adverse outcomes are especially concerning given that they may exacerbate existing racial inequalities. Compared to the overall child population in the United States, American Indian/Alaska Native children in foster care are over-represented, as are Black and multiracial children (The Annie E. Casey Foundation, 2020). These racial disparities are particularly stark when looking at the risk of foster care entry over the lifetime. By age 18, the risk of foster care entry is highest for American Indian/Alaska Native children at 15.4%, followed by Black children at 11.0%, compared to the overall average of 5.91% (Wildeman & Emanuel, 2014). In contrast, Hispanic, white, and Asian children are under-represented in foster care (The Annie E. Casey Foundation, 2021), with risks of lifetime foster care entry at 5.4%, 4.9%, and 2.1%, respectively (Wildeman & Emanuel, 2014). A rigorous debate in the literature on foster care centers on whether these

disparities are due primarily to disparate exposure to maltreatment or disparate treatment in the child welfare system (Dettlaff, 2014).

Parental Substance Use and Child Welfare

Approximately one in eight children live in a household where at least one parent has a substance use disorder (Lipari & Van Horn, 2017), which can put children at greater risk of adverse physical and psychosocial outcomes. Prenatal exposure to drugs puts infants at greater risk of low birth weight, congenital abnormalities, physiological and neurobehavioral withdrawal symptoms (e.g., neonatal abstinence syndrome), and abnormal neurological functioning. Effects persist into childhood, with children prenatally exposed to drugs having poorer growth, worse academic achievement, more behavioral problems, poorer language development, and a greater predisposition to drug use than children who were not prenatally exposed to drugs (Behnke et al., 2013). Exposure to parental substance use during childhood and adolescence can also negatively affect youth wellbeing. Parental substance use can produce inconsistency in parenting, disruption in healthy routines, and parental stress, which in the most extreme circumstances can put children at greater risk of physical abuse or witnessing domestic violence. The use and production of drugs can endanger children's physical safety by exposing them to used needles, open flames or lighters, and toxic chemicals (Smith, Wilson, & Committee on Substance Use and Prevention, 2016). Importantly, however, parental substance use exists on a spectrum of severity and risk to a child (Kepple, 2018) and not all children whose parents use substances will experience these adverse outcomes. For example, a parent who drinks occasionally or who manages a former opioid addiction with medication-assisted treatment (e.g., methadone) can still be an effective, competent parent.

Children whose parents use substances enter foster care either because the parental substance use itself brings a child to the attention of the child welfare system (for the reasons described above), or because parental substance use is revealed during an investigation for some other type of maltreatment. An increasing proportion of children enter foster care due to parental substance use: 14.53% of foster care entries were due to parental substance use in 2000 compared to 36.26% in 2017 (Meinhofer & Angleró-Díaz, 2019), with increases particularly large among white and American Indian/Alaska Native children (Meinhofer, Onuoha, Angleró-Díaz, & Keyes, 2020). Whether or not parental substance use leads to a child's entry into foster care depends on a series of decisions made by professionals before and after the initial contact with the child welfare system. For example, a doctor must decide whether or not to screen a pregnant woman for substance use, a caseworker must decide whether or not this mother's substance use constitutes child maltreatment, and a judge must decide whether or not the substance use endangers a child's safety and wellbeing enough to require removal from the home. Whether or not these decisions will lead to a child's placement into foster care depends not only on factors specific to the parent, child, and professional, but also the larger geographic and historical context. The following section details the pathways through the child welfare system to demonstrate the various decision points in which the link between parental substance use and a child's entry into foster care may vary.

PATHWAYS THROUGH THE CHILD WELFARE SYSTEM AND CASEWORKER DECISION-MAKING

Before a child enters foster care, child welfare workers, judges, and other professionals must make a series of decisions about whether maltreatment has occurred (or is occurring), the severity of the maltreatment, whether the child can remain safely at home, and, if not, where the child will stay once removed. These decisions are not made

in a vacuum; rather, they reflect these professionals' beliefs about what behaviors and attributes make a good parent, beliefs which themselves are informed by dominant narratives of race, gender, class, nativity, and disability (Roberts, 2002; Reich, 2005). Baumann and others (2014) introduced the decision-making ecology framework in 1997 to conceptualize how influences and constraints at multiple levels of a caseworker's ecology shape their decision-making. Factors include those related to the caseworker themselves (e.g., years of experience), the case (e.g., evidence of parental substance abuse), the organization (e.g., amount of worker turnover), and the larger geographic, historical, or policy context (e.g., availability of substance use treatment). These factors influence how a caseworker assesses a situation – an assessment which includes perceptions of the benefits and costs of a given action (e.g., removal of the child) to the child, family, worker, and agency – and the threshold at which the amount of perceived risk or strength of evidence prompts the worker to take such action. This framework is useful for understanding the multitude of decisions that child welfare workers and other professionals make and how these individual decisions accumulate into larger trends and disparities. The first two subsections describe the initial processes prior to foster care entry: coming to the child welfare agency's attention and having a report substantiated. The second two subsections discuss the decision to remove a child from the home, which is the subject of Chapters 2 and 3, and permanency outcomes for foster children, which is explored in Chapter 4.

Reporting and Screening In

A family's involvement with the child welfare system typically begins when someone reports child maltreatment to child protective services or a law enforcement agency. At this point, an intake worker must assess the validity of the allegation and the

severity of the alleged maltreatment, drawing on the state's statutory definitions of child maltreatment. The intake worker then decides whether or not to screen in a report for further investigation. Screened out cases at this stage are closed and no further investigation takes place, although some screened out cases may be diverted to other community agencies (Child Welfare Information Gateway, 2017a). In a minority of cases, often involving a low to moderate risk of maltreatment, the intake worker may refer the family to voluntary services with the hope of preventing future maltreatment (often deemed "alternative" or "differential response"). In 2019, child protective services agencies received approximately 4.38 million reports, or about 59.5 per 1,000 children. Out of these reports, 54.5% were screened in (including reports that received an alternative response) and 45.5% were screened out. States vary dramatically in the proportion of screened in reports: in 2019, Alabama had the largest proportion of screened in reports at 98.4%, while South Dakota had the smallest proportion at 16.0% (U.S. Department of Health & Human Services, 2021). These differences are due in part to the threshold of evidence or threat of harm needed for further investigation. For example, in South Dakota, cases are only screened in when the report suggests that a child is facing present danger, impending danger, or another "danger threat". Alabama requires that a prevention assessment must be conducted within 90 days for all reports that do not provide sufficient evidence and considers all of these reports to be "screened-in" (USDHHS, 2021). These differences illustrate how state-level variation must be contextualized within geographically-specific practice and policies.

Reports of maltreatment often occur in the context of "mandated reporting," in which individuals are required by law to report known or suspected child abuse and/or neglect. Mandatory reporters are most commonly professionals who have frequent contact with children, such as teachers, healthcare workers, mental health professionals,

child care providers, and law enforcement. In 2019, professionals who have frequent contact with children made up 68.6% of screened-in reports. The types of professionals that made up the highest percentages of reports were teachers and other educational professionals (21.0%), legal and law enforcement professionals (19.1%), and doctors and other healthcare providers (11.0%) (USDHHS, 2021).

For parents who use substances, entry into the child welfare system often occurs in healthcare settings, in which doctors, as mandatory reporters, must report parental substance use to child protective services. As a result, parents who use substances may avoid seeking treatment out of fear that they will be reported to child protective services (Stone, 2015; Fong, 2019). Women may avoid prenatal care altogether (Roberts & Pies, 2011). These concerns are not unfounded: one study found that increases in county-level child health insurance rates were associated with greater child maltreatment reporting (Puls et al., 2020), demonstrating how the doctor's office is a common site for the detection of child maltreatment. This avoidance puts mothers and infants not only at greater risk of adverse health outcomes, but also at greater risk of child welfare involvement if their substance use worsens over time. Furthermore, this avoidance is likely greater among poor women who are more likely to get their healthcare from state-funded clinics, compared to middle to upper-class women who may trust their private physician to not report them to child protective services (Fong, 2017). Without proper treatment, women who use substances will likely give birth to an infant with evidence of prenatal drug exposure, which would initiate contact with the child welfare system. However, requirements for healthcare professionals to report parental substance use have varied over time and place. This variation is described in more detail in Section 1.4.4.

Investigation and Substantiation

Following a report, investigation is typically the next step in a family's pathway through the child welfare system. In 2019, out of all screened-in cases, 13.8% received an alternative/differential response and 86.2% received an investigation. Most screened-in reports receive an investigation carried out by a child protective services caseworker, which usually takes place within a few days of the initial report (USDHHS, 2021).

During an investigation, caseworkers typically conduct face-to-face, in-home interviews with the child, their siblings, parents, and any other adults in the household. They may also consult other individuals, such as teachers, physicians, relatives, law enforcement officers, and neighbors, in order to gain a more complete understanding of family functioning and the child's risk of harm. Many agencies use structured safety and/or risk assessment instruments and take note of risk factors like parental drug or alcohol abuse, domestic violence, and inadequate housing. Note that caseworkers not only investigate the evidence for the specific allegation(s) made in the report, but also the evidence for any kind of past, present, or future maltreatment or risk of maltreatment (Johnson-Motoyama, Dettlaff, & Finno, 2012).

Following an investigation, the caseworker makes a decision (also called a disposition) regarding whether the child has been maltreated or is at risk of maltreatment. This decision is critical as it determines whether a family's involvement with the child welfare system will continue. The two most common dispositions are substantiated or unsubstantiated. In general, substantiated cases refer to those in which caseworkers found evidence suggesting that a child has been maltreated or is at risk of maltreatment. Cases that lack enough evidence or those associated with a low risk of harm to the child are designated as unsubstantiated. In 2019, 16.7% of screened-in cases were substantiated, 13.8% received an alternative response, and 69.5% were unsubstantiated (USDHHS,

2021). Children with substantiated cases are much more likely to be removed from their homes and placed in foster care than children whose report was unsubstantiated or screened out: in 2019, 22.9% the former group and 1.8% of the latter were removed from their homes (USDHHS, 2021).

As predicted by the decision-making ecology framework, caseworkers' judgments of risk, harm, and strength of evidence are often the strongest predictors of substantiation (Cross & Casanueva, 2009; Stoddart et al., 2018). In addition, the availability of resources for families with substantiated maltreatment also play a role in substantiation decisions (DePanfilis & Girvin, 2005). Cases involving parental substance use in general are more likely to be substantiated (Berger, Slack, Waldfogel, & Bruch, 2010; Victor et al., 2018), but the link between parental substance use and substantiation (and eventual entry into foster care) likely varies by time and place. Specifically, historical and geographical context shape what kind of information constitutes sufficient evidence of maltreatment, how caseworkers judge a child's risk of harm, and which cases are diverted outside of the child welfare system.

One major source of variation in substantiation of maltreatment related to parental substance use is state definitions of child maltreatment. At the federal level, the Child Abuse Prevention and Treatment Act defines child maltreatment as "any recent act or failure to act on the part of a parent or caretaker, which results in death, serious physical or emotional harm, sexual abuse or exploitation, or an act or failure to act which presents an imminent risk of serious harm." States can choose to expand the federal definition to include other forms of maltreatment, including parental substance use (Child Welfare Information Gateway, 2019a). In 23 states, substance use during pregnancy is included in statutory definitions of child maltreatment, while 14 states consider exposing children to the manufacture, possession, or distribution of illegal drugs as child endangerment (Child

Welfare Information Gateway, 2020a). In states without specific policies on parental substance use, caseworkers can make the claim that parental substance use has contributed to a parent's inability to appropriately provide for the child and/or protect them from harm (Henry et al., 2018). In other words, how caseworkers justify substantiation of parental substance use as child maltreatment (i.e., as a form of maltreatment itself or as a proxy for other types of maltreatment), and whether it is severe enough to warrant intervention, depends in part on state definitions. In addition, maltreatment reported by a professional source (particularly a mandated reporter), is more likely to be substantiated, likely because these accounts are seen as more objective (King, Lawson, & Putnam-Horstein, 2013). Thus, in states where healthcare professionals are mandated to report parental substance use, the growth in substance use-associated foster care entry rates may be higher.

Other local conditions may also play a role in whether cases involving parental substance use are substantiated. In areas lacking services that can be offered to families, cases may be less likely to be substantiated even if maltreatment exists (DePanfilis & Girvin, 2005). This decision may occur more often in rural areas lacking adequate substance abuse treatment programs. On the other hand, substantiation may be higher in places with fewer resources if child welfare involvement is the only way for families to access services (Maguire-Jack & Byers, 2013). One study demonstrated that substantiation rates increased in response to higher child fatality rates, suggesting that child welfare agencies respond to social outrage surrounding child maltreatment fatalities by erring on the side of more aggressive action (Jagannathan & Camasso, 2017). In the context of the opioid epidemic, child welfare workers in hard-hit areas may be more likely to substantiate cases involving parental substance use, given greater local attention to the effects of opioid addiction.

Evidence regarding the association between child race/ethnicity and substantiation is mixed, with some studies showing an increased likelihood of substantiation for Black and Hispanic children compared to white children (Dettlaff et al., 2011), and others finding no difference (Font, Berger, & Slack, 2012). Furthermore, whether documented racial disparities in substantiation arise from disparate treatment by child welfare workers or disparate exposure to maltreatment is a source of intense debate in the literature. Little research examines whether race/ethnicity is associated with substantiation decisions among cases involving substance use specifically, although one study found that parental substance use was associated with a greater risk of substantiation for Hispanic, but not white or Black families (Cheng & Lo, 2013). One possibility is that substantiation rates may increase among white children specifically as agencies pay greater attention to white, working-class rural parents who are perceived to be at risk of opioid addiction in ways that Black parents are not.

After Substantiation: Removal or In-Home Services

Once a report of maltreatment is substantiated, next steps will depend on the severity of harm, the perceived risk of continued or future maltreatment, and the child's immediate safety. In cases with little to no risk, such as when a caseworker determines that maltreatment was a one-time incident with no ongoing threat to the child's safety, the case may be closed with referral to community resources. In the most severe circumstances, the child welfare agency may immediately remove a child from their home and place them in protective custody, usually an emergency shelter or group home. Typically, children with a substantiated case will remain at home while their caregiver(s) receive services from child protective services and other agencies, such as parenting classes and substance abuse treatment, under the supervision of their caseworker. Their

caseworker will monitor the caregiver's progress and may close the case if they deem the child no longer at risk of maltreatment. If caregivers refuse these services, the child was removed from the home, or if the agency otherwise determines the authority of a juvenile court is needed to keep the child safe, the agency will initiate a court hearing (Child Welfare Information Gateway, 2020b). During the court hearing, a judge will determine if the child can stay at home or if the child should be removed from the caregiver's care and placed in foster care.

As with decisions regarding substantiation, caseworkers rely on their assessments of the child's safety to determine whether or not to petition the court for the child's removal from the home (Bartelink et al., 2018). These perceptions, in turn, may be influenced by implicit beliefs about race/ethnicity, class, and parental substance use. Although most research on the decision to place a child into foster care focuses on caseworker, parental, and case characteristics, the larger social and policy context also affect caseworkers' decision-making. In other words, these external factors affect foster care entry because they are mediated through individual caseworkers' beliefs and attitudes. For example, caseworkers make decisions based on concerns for their own liability: caseworkers who feel that their agency would not support them if a child was harmed while remaining at home are more likely to remove the child (Graham, et al. 2015). As suggested earlier, caseworkers in areas disproportionately affected by the opioid epidemic might feel greater pressure to respond more aggressively to cases involving parental substance use because they and their agencies are under greater public scrutiny. As mentioned earlier, caseworkers may also make decisions based on the level of availability (or their perception of such availability) of services.

Regarding race, Meinhofer and colleagues (2020) show that Native American and white children are increasingly overrepresented and Black children are increasingly

underrepresented among foster care cases involving parental substance use. These patterns reflect the growth in opioid use disorders and overdose deaths among white and Native American, but not Black, individuals (Lippold, Jones, Olsen, & Giroir, 2019). The question of why foster care entry rates associated with parental substance use have increased among the former, but not the latter, group deserves further scrutiny. It is also unclear how these patterns differ by other sociodemographic variables, and this further variation may reveal shifts in how the child welfare system allocates resources. As attention has shifted from the crack cocaine epidemic in urban areas to the opioid epidemic in rural areas, greater growth in substance use-associated foster care entry rates among white and Native American families and declines in these rates among Black families may simply be due to the former's overrepresentation in rural areas. On the other hand, if rates are declining for Black families across all levels of urbanization, it may signal a lack of resources in majority Black areas (Smith & Pressley, 2019), especially given that high rates of problematic substance use in some of these communities (Stewart et al., 2017) would predict greater foster care entry rates. Additionally, infants and toddlers are more likely to have a report substantiated (Cross & Casanueva, 2009), likely because caseworkers view younger children as more vulnerable and because substance use exposure among this age group is more likely to be identified by a healthcare professional (King et al., 2013), but whether there are racial differences in the identification of prenatal substance use exposure is unclear. Chapter 2 explores these possibilities by examining trends in foster care entries associated with parental substance use by race/ethnicity, age, and level of urbanization.

In a child welfare context characterized by a lack of clear statutory or agency guidelines, high workloads, and short time limits, assessments are subject to biases and heuristics to facilitate rapid decision-making (Spratt, Devaney, & Hayes, 2015).

Perceived level of caregiver cooperation is one such heuristic in the decision to remove a child (Bartelink et al., 2018), based on the reasoning that caregivers who are more engaged with the recommended services are more committed to ensuring their child's safety and wellbeing (Reich, 2005). For parents with substance use disorders, complying with recommended services may be difficult, due to the effects of the drugs themselves, logistical barriers to treatment (e.g., lack of childcare, transportation, and financial means; Frazer, McConnell, & Jansson, 2019), and a lack of availability of programs willing to treat them (Johnson, 2019). Parents may be less likely to have their children removed due to substance use if they live in areas with a greater availability of accessible services that address substance abuse as well as other factors associated with neglect, such as food and housing insecurity. Thus, for reasons discussed in this section as well as those related to substantiation decisions discussed in Section 1.3.2., foster care entries due to parental substance use may differ by state and county. Little research examines the larger social and political context in which these child welfare decisions are made; to address this gap in the literature, Chapter 3 investigates sources of county-level variation in foster care entries specifically attributable to parental substance use.

Permanency Planning and Outcomes

Once a child is in foster care, a court hearing must occur within at least the first year of the child's placement to determine the goal for the child's permanent living situation following foster care (i.e., permanency planning). For children in foster care in 2019 with established case plans, the most common goal was reunification at 57%, followed by adoption at 29% (USDHHS, 2020). The ability to permanently exit foster care is contingent on the child's current and/or planned placement being safe for the child. For children whose permanency plan is to reunify with their family, their

caregivers must comply with the requirements set out by the case plan. Case plans include services intended to address unmet family needs, correct any conditions that led to maltreatment, and prevent any future maltreatment. Following the initial court hearing, subsequent hearings occur at least every six months to monitor the family's progress in complying with the case plan (Child Welfare Information Gateway, 2020c). If caregivers do not make satisfactory progress towards case plan goals, the agency will move towards terminating parental rights so that a child can be legally adopted and achieve permanency in an adoptive home. Additionally, federal law mandates that child welfare agencies petition the court to terminate parental rights if a child has been in foster care for 15 of the last 22 months and/or in extreme cases of physical abuse.

Thus, the most common exits from foster care are either reunification with family or adoption by a non-relative foster parent or relative, which requires the termination of parental rights. Out of the 248,669 children who exited foster care in 2019, 47% reunified and 26% were adopted, while the remaining 27% were placed under the care of a guardian (11%), emancipated (8%), placed with a relative (6%), transferred to another agency (1%), or had died or run away (1%) (USDHHS, 2020). Compliance with case plans and demonstrable progress towards rectifying the conditions that led to maltreatment are two of the biggest factors determining whether reunification occurs (Wulczyn, 2004), but considerable variation in reunification rates at the state level (LaBrenz et al., 2021) suggests that contextual factors play a role as well.

Parents with substance use disorders face unique challenges that complicate the reunification process once their child enters foster care. Except in extreme circumstances, agencies must put forth "reasonable efforts" to reunify parents with their children. For parents with substance use disorders, these efforts will include substance abuse treatment, and one of the major predictors of reunification in this situation is compliance and

success with treatment (Harris-McKoy et al., 2014). This expectation of compliance may be particularly problematic for Black women, who may be especially distrustful of healthcare providers and avoid seeking care, due to the long history of the medical community exploiting and abusing Black individuals (Roberts, 2002). In addition, treatment programs may not be available near the caregiver, particularly in rural areas, and/or other logistical barriers like a lack of transportation or childcare may prevent caregivers from accessing treatment. Furthermore, some states' Medicaid programs will not cover certain effective forms of substance abuse treatment, such as medication-assisted treatments (MATs). When caregivers are unable to attend or complete treatment due to factors outside of their control, caseworkers may view this inability instead as a lack of motivation to be an effective parent and will not advocate for reunification (Smith, 2008). Furthermore, even when parents are able to complete substance use treatment, judges in charge of custody decisions may not view MATs as compatible with effective parenting, based on the belief that reliance on MATs like methadone is no better than an opioid addiction (Radel et al., 2018). Lastly, the short time frame in which reunification must occur before agencies must move forward with parental rights termination – 15 months – is often incompatible with the complex, nonlinear path to recovery from substance abuse (Harris-McKoy et al., 2014). Thus, many parents will permanently lose parental rights before being able to complete treatment.

In addition to treatment compliance, caseworkers look for more general cooperation with the caseworkers' plans as evidence that parents are motivated to reunify with their children and provide them with a safe, nurturing environment (Smith, 2008). This expectation of unquestioning cooperation, however, puts caregivers from groups who the child welfare system historically mistreated at a disadvantage. Native American families in particular may be hesitant to engage with caseworkers due to enduring trauma

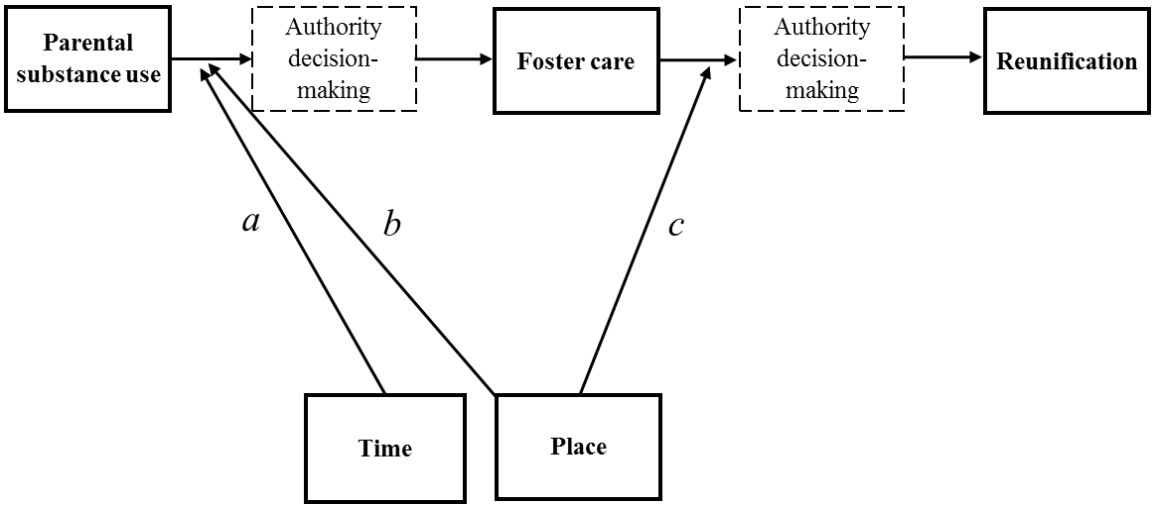
from the historical injustices committed by child welfare agencies against Native Americans (Halverson, Puig & Byers, 2002). The lack of trust among caregivers from historically marginalized groups may prevent them from forming positive relationships with their caseworkers, which in turn can make reunification less likely (Reich, 2005). Racial disparities that exist in foster care entries associated with parental substance use thus may be further reproduced as disparities in who gets reunified as well.

Before and after a child is placed in foster care, parents with substance use disorders face many co-occurring problems such as poverty, unemployment, mental illness, and domestic violence (Choi & Ryan, 2007); although not a panacea, substance use treatment may better position parents to confront other types of challenges. Thus, Chapter 4 extends the literature on predictors of family reunification by considering how state policy context – specifically Medicaid funding of substance abuse treatment – shapes reunification outcomes for foster care children with parental substance use.

This section outlined the pathways through the child welfare system, which are separated by multiple decision points that parents and caregivers face before, during, and after a child enters foster care. At each of these points, professionals (including but not limited to those in the child welfare system) must make high-stakes decisions about the child's safety and wellbeing, often with incomplete information and with little time to deliberate. In Figure 1.1., I outline the basic conceptual diagram of my research questions. The path between parental substance use and foster care encompasses the processes of reporting, screening in, investigation, substantiation, and removal; variation in this pathway is analyzed in Chapters 2 and 3. The path between foster care and reunification encompasses permanency planning and permanency outcomes; variation in this pathway is analyzed in Chapter 4. Note that the boxes with dashed lines labeled "authority decision-making" are not directly measured in this dissertation, as the factors

leading to such decisions are not available in the data. In the following section, I give a brief historical overview of the development of the child welfare system to illustrate 1) how these decision points, including who makes the decisions, came to exist and 2) how authority decision-making at each of these points is shaped by historical, policy, and geographic context.

Figure 1.1. Conceptual Diagram of Research Questions



THE CHILD WELFARE SYSTEM, RACE, AND SUBSTANCE USE IN HISTORICAL PERSPECTIVE

Understanding the history of the child welfare system in the United States is critical for understanding how inequalities in the system are reproduced today. In particular, this brief historical overview is intended to show that disparities in the foster care system are not simply due to bias on the part of individual caseworkers and court members, but rather arise from the social and political conditions under which the child welfare system developed. The following discussion highlights the historical conditions under which the multiple decision points in the child welfare system developed, as well as the historical context for why the link between parental substance use and entry into

the child welfare system varies at each of these points. The first subsection discusses how the invention of the modern child welfare system during the turn of the century was based on white, middle-class, Protestant ideals of parenting that precluded any type of substance use. The second subsection describes how mid-century developments gave doctors a central role in identifying and reporting maltreatment, a role which was further solidified with the development of toxicological screening of mothers and newborns. This subsection also calls attention to the child welfare system's discriminatory treatment of Native American families. Lastly, the third subsection outlines how child welfare policy developed first in response to the crack cocaine epidemic and the War on Drugs and most recently in response to the opioid epidemic. Specifically, this subsection emphasizes how the orientation of child welfare policy shifted from a punitive one during the War on Drugs to a therapeutic one in the midst of the opioid epidemic.

The Progressive Era and the Roots of the Modern Child Welfare System

Lindsey (1994:18) describes how the child welfare system developed from a *residual perspective* (or *residual approach*). According to this perspective, assistance from the government should only be used after an individual has exhausted all other sources of help, such as friends, family, and their community. Furthermore, this assistance should be short-term, minimal, and available only to specific groups in need. In the early days of foster care in the mid-19th century, these specific groups were abandoned or orphaned children, typically in urban areas, who were sent either to orphanages or family farms to provide labor. By the turn of the 20th century, however, children whose mothers were deemed unfit as caregivers began entering foster care as well.

Although child maltreatment has always existed, it was not constructed as a "social problem" (Fuller & Myers, 1941) in need of intervention until the late 19th and early 20th century. This new conception of child maltreatment as a deviant act coincided with Progressive Era concerns about the effects of industrialization and urbanization on families, which cannot be separated from concerns about the changing racial and ethnic composition of cities (Reich, 2008). The early "child savers" of the Progressive Era, primarily bourgeois women, removed children from impoverished (often single-mother) homes in newly developing urban areas, and placed them with rural families until mothers could prove they had sufficient economic resources to raise their children. Characteristic of other moral reform movements of this era, these child savers blamed urban poverty, alcohol, and the influx of immigrants for all manner of social ills, including child abuse. Records from this time reveal child welfare workers admonishing parents for drinking alcohol (Lindsey, 1994); Linda Gordon (1986:461) describes these workers as "unable to distinguish alcoholics and heavy drinkers from moderate wine and beer drinkers" who believed "that women who took spirits were degenerate and unfit as mothers." At the same time, "child savers" in other parts of the country were separating Native American children from their families to send them to boarding schools where they were to be assimilated into a white, "American" way of life (Goldsmith, 2002). In other words, the normative standards of parenting these workers measured others by were those of white, native-born, Protestant, middle-class, pre-urban families with plentiful resources (Gordon, 1986).

Although the specific groups helped (or harmed) by child welfare workers expanded, the residual perspective remained. This perspective assumes that all families have ample opportunities to provide for the wellbeing of their children, thus an inability to do so must be the result of personal failing. The job of the caseworker, then, is to

remove the child to foster care while they work with caregivers to identify and remedy the dysfunction that brought family to the attention of the child welfare agency (Lindsey, 1994:27). From the beginning of child welfare as a formal institution, this dysfunction was defined from a white, middle-class perspective.

Child Welfare in the Mid-Twentieth Century

Throughout the 20th century, child welfare policy, as well as the public's understanding of child maltreatment, evolved in response to medical advances that ostensibly allow doctors to identify the physical evidence of child abuse. In the early 1960s, pediatric radiologist Dr. C. Henry Kempe demonstrated how physical abuse can be identified via X-ray imaging of skeletal injuries and other fractures in children. Furthermore, Kempe and colleagues' work (1962) was pivotal in defining caregiver psychiatric illness as the root cause of child abuse and called upon healthcare providers to bring these patients to the attention of legal authorities and societies for the prevention of cruelty to children, the precursors to child protective service agencies. During what Pfohl (1977) called the "child abuse reporting movement," the media, medical community, social work agencies, and voluntary associations advanced the idea that child abuse represented a medical condition which required treatment and mandatory reporting was crucial to identify individuals in need of help. By the 1970s, all states had some form of mandatory child abuse reporting laws (Reich, 2008). Notably, reporting requirements were first limited to doctors due in part to the belief that they would be the first to uncover abuse when a parent brings in their child for medical help and that the identification of physical abuse requires the specific diagnostic training and skill of a physician (Paulsen, 1967). These developments set the stage for doctors' continuing role

in the child welfare system as early screeners for parental substance use as a form of child maltreatment.

The mid-to-late 20th century was also a critical point in the development of federal policy and practice regarding Native American child welfare. With funding from the Children's Bureau and the Bureau of Indian Affairs, the Child Welfare League of America launched the Indian Adoption Project in 1958. Over the course of a decade, hundreds of Native American children (and likely more than is officially documented) were removed from their reservation homes in the West to live with white families in the Midwest and East (Crofoot & Harris, 2012). This program is but one example of how pro-assimilation beliefs led to both private and public organizations removing Native American children from their homes in the name of "saving" them (Goldsmith, 2002). In response to tribal advocacy denouncing the disproportionate removal of Native American children from their homes, Congress enacted the Indian Child Welfare Act (ICWA) in 1978 to ensure the involvement of tribal governments in Native American child welfare cases. Specifically, the ICWA gives tribes exclusive jurisdiction over cases in which a child lives on a reservation or is in care of the tribe, and concurrent jurisdiction over cases involving any other Native American child. Despite this attempt at affirming the sovereignty of tribal nations in foster care proceedings and ensuring the preservation of cultural values, Native American children in reservation areas continue to be removed from the home at disproportionate rates and placed with non-Native families (Crofoot & Harris, 2012).

The War on Drugs and Child Welfare Legislation

The issue of substance use in child welfare cases became most visible during the crack cocaine epidemic of the 1980s and 1990s and the ensuing War on Drugs. Between

1985 and 1999, the number of children in foster care more than doubled from approximately 276,000 children to 568,000 (Swann & Sylvester, 2006). The War on Drugs' influence on the rise of mass incarceration, including the enactment of mandatory minimum sentencing, three strikes laws, and the elimination of federal parole, cannot be overstated. In addition to the effects of mass incarceration on men, between 1978 and 2014, the number of incarcerated women, often mothers, increased nine-fold. By 2008, one in every nine Black children and one in every 28 Hispanic children had an incarcerated parent, compared to one in every 57 white children (Western & Pettit, 2010). State-level female incarceration rates accounted for nearly a third of states' rise in foster care caseloads between 1985 and 2000 (Swann & Sylvester, 2006). Given that mothers of color in particular are disproportionately incarcerated, these racial disparities were and continue to be reproduced in the child welfare system as well.

Beyond the direct effect of incarceration, policies regarding prenatal substance use enacted as a part of the War on Drugs also contributed to rising foster care caseloads, particularly in urban areas. Racialized depictions of a "crack baby," an infant prenatally exposed to crack cocaine, proliferated and sparked a moral panic among politicians, healthcare providers, and the general public. During this time, states began adopting policies mandating that healthcare providers must report pregnant women and/or newborns who show evidence of substance use to child protective services (Jarlenski et al., 2017). This evidence is often based on toxicology screening, either of the mother or the infant. Because screening is not typically universally carried out, there may be differential rates of testing for individuals who look more or less like stereotypical depictions of drug users (i.e., poor, Black, single mothers) common in media and political rhetoric. In one county in Florida, Black women were reported to child protective services for substance use during pregnancy at ten times the rate of white women, despite

no major differences in substance use patterns between the two groups (Chasnoff, Landress, & Barrett, 1990). Some researchers and advocates have suggested that screening all pregnant women for substance use may reduce these disparities. However, another study found that even in a county with universal screening, Black newborns were four times more likely than white newborns to be reported to child protective services despite, again, roughly equal rates of substance use among Black and white women (Roberts & Nuru-Jeter, 2012). In other words, disparities enter in at the reporting as well as the testing stage. Further exemplifying the punitive response to maternal substance use characteristic of this time, Paltrow and Flavin (2013) documented 348 cases between 1973 and 2005 in which a pregnant woman was arrested or forcibly detained due to illicit substance use. Most of these women were criminally charged with child abuse or neglect.

Concerns began growing in the 1980s and 1990s regarding the record numbers of children entering the foster care, the length of time children spent in foster care, and the instability children faced as they moved between foster placements. The Adoption and Safe Families Act of 1997 thus sought to shorten the time children spend in foster care by accelerating the process of terminating parental rights and encouraging adoption. ASFA required that, in most cases, child welfare agencies must file a petition to terminate parental rights and seek out a qualified adoptive family when the child has been in foster care for 15 out of the previous 22 months. In order to incentivize adoption, under AFSA states became eligible to receive at least $4,000 per child adopted from public foster care (Center for the Study of Social Policy, 2009). Child welfare historians characterize child welfare policy as a pendulum swinging between an emphasis on family reunification and the preservation of biological ties on one side to the superiority of removing children from the home and adoption on the other; ASFA represented a major swing in the latter direction (Reich, 2005).

The Opioid Epidemic and Child Welfare Legislation

Following a decline in the number of foster care cases in the 2000s, caseloads began rising again in the early 2010s (Meinhofer & Angleró-Díaz, 2019) – an increase which researchers have linked to opioid-related morbidity and mortality (Quast, 2018). While the beginning of the opioid epidemic can be traced to doctors' over-prescription of opioid pain medication – prescriptions which Black patients were much less likely to receive (Anderson, Green, & Payne, 2009) – the crisis of recent years is fueled by a large supply of illicitly manufactured heroin, fentanyl, and fentanyl derivatives (Kertesz, 2017). During the crack cocaine epidemic of the 1980s, policymakers and the media focused on children born to poor, Black single mothers in urban areas as the primary victims of drug use. In contrast, the opioid epidemic (at least in its early years) has disproportionately affected white, working-class Americans in rural areas (Rigg, Monnat, & Chavez, 2018). The framing of the crack cocaine epidemic as a criminal justice problem during the War on Drugs contrasts with the current framing of the opioid epidemic as a public health issue (Shachar et al., 2020), with consequences for the policy approach taken to address each crisis. Whereas the War on Drugs' policy emphasis was more punitive, the policy approach to the opioid crisis focuses more on providing treatment to affected families. This emphasis can also be seen in new legislation regarding substance use in the child welfare system. However, this new legislation still allows for considerable decision-making and policy discretion, thus whether or not child welfare agencies and professionals take a more punitive or therapeutic approach to substance-using parents may still depend on racialized and class-based beliefs about substance use.

In reauthorizing the Child Abuse Prevention and Treatment Act (CAPTA), the key federal legislation addressing child maltreatment, in 2003, Congress made several

key changes regarding prenatal drug exposure. States must ensure that they have in place policies and procedures to: address the needs of substance-exposed infants, develop a plan of safe care for these infants, and promptly investigate and assess cases regarding substance-exposed infants. The first of these requirements specifically mandates that health care providers involved in the care of substance-exposed infants must notify child protective services of such exposure (Young et al., 2009). However, there is no federal guidance regarding the processes by which these infants should be identified (e.g., whether hospitals should use universal or targeted screening and what types of tests should be used) nor what precisely constitutes prenatal drug exposure. This lack of federal guidance allows for significant state, county, and even agency-level variation in the interpretation of these requirements and produces several problems. First, it gives states significant latitude to adopt policies that may be counterproductive to women's health, such as those that explicitly criminalize prenatal drug exposure. Second, without clear policy guidelines, bias can creep in to the decision-making processes of individual healthcare professionals and child welfare workers, leading to a widening of race and class disparities in the child welfare system. Third, the lack of a clear definition of prenatal drug exposure allows for the use of nonspecific measures as evidence. For example, neonatal abstinence syndrome, or the set of symptoms associated with drug withdrawal, can be caused both by illicit drugs as well as legal prescriptions like antidepressants and medication-assisted treatment for opioid addiction (e.g., methadone) (Goodman, Whalen, & Hodder, 2019).

Most recently, the Comprehensive Addiction and Recovery Act (CARA) of 2016 amended CAPTA to specify that plans of safe care must address the health and substance use disorder treatment needs of not just the infant but also the affected caregiver(s); furthermore, states must develop systems to monitor that appropriate services are being

provided. Lastly, the SUPPORT for Patients and Community Act of 2018 provided additional funding to states to assist child welfare agencies, substance use treatment programs, hospitals, and other medical and public health organizations in collaboratively developing, implementing, and monitoring these plans of safe care (Child Welfare Information Gateway, 2019b). These policies epitomize how the federal approach to the opioid epidemic emphasizes treatment over criminalization.

Summary of Conceptual Model and Research Questions

Figure 1.1 illustrates the conceptual model underlying the three studies of this dissertation. The previous discussion illustrates how multiple levels of influence – from state policy to changing norms and narratives – shape which children enter the foster care system due to parental substance use, as represented by the path between parental substance use and foster care. Furthermore, these ecological factors may also impact the likelihood of reunification among these families following entrance into foster care, as represented by the path between foster care and reunification. Each of these paths is mediated by authority decision-making (e.g., a caseworker decides whether or not to substantiate a case of maltreatment associated with parental substance use), but the factors implicated in these decisions are not directly measured in the data and are thus represented with dashed lines. Rather, the end results of these decision-making processes (e.g., entrances into and exits from foster care associated with parental substance use) reveal how historical time and geographic locale moderate the path between parental substance use and entry into foster care, and the path between foster care and reunification. The three studies of this dissertation use longitudinal, administrative data from the Adoption and Foster Care Analysis and Reporting System across 18 years and state- and county-level data drawn from multiple sources to analyze how these decision-

making processes are contextualized within time and place. The first study analyzes how rates of substance use-associated foster care entries and the proportion of total foster care entries attributable to parental substance use have changed over recent years by race/ethnicity, age, and level of urbanization. This study asks: to what extent is the shifting narrative of parental substance use from a problem affecting Black, urban parents to one affecting white, rural parents reflected in trends in substance use-associated foster care entry rates over time (path a in Figure 1.1)? The geographic variation in these trends are then explored more in depth in the second study (path b), which investigates the extent to which state policy and county-level health and sociodemographic characteristic predict growth in substance use-associated foster care entry rates over time. This study asks: is the link between parental substance use and foster care stronger or weaker in a county depending on state policy, opioid usage, sociodemographic characteristics, and healthcare availability? Lastly, the third study examines how state policy context shapes the likelihood of reunification among children who entered foster care due to parental substance use (path c). This study asks: is the likelihood of reunification for children who enter foster care due to parental substance use greater when a state has expanded access to healthcare and substance use treatment? Chapter 5 then closes with a discussion of the major conclusions that can be drawn from these studies and policy implications. In sum, these studies address important gaps in the literature regarding what has prompted growth in this population, where this growth is concentrated, and what factors are associated with permanency outcomes in this population.

Chapter 2. Study I: Trends in Substance Use-Associated Foster Care Entry Rates

INTRODUCTION

The growth in foster care cases in recent years is due in part to increases in the number of children entering foster care due to parental substance use (Meinhofer & Angleró-Díaz, 2019). Mirroring how concerns in the 1980s regarding the spillover effects of the crack cocaine epidemic on children led to legislation criminalizing parental drug use, in the wake of the current opioid epidemic recent legislation has required states to take greater action to protect youth exposed to parental drug use (Richards et al., 2020). The overall trend of increasing rates of foster care entry due to parental substance use, however, masks large racial/ethnic (Meinhofer, Onuoha, Angleró-Díaz, & Keyes, 2020) and geographic disparities (Ghertner, Waters, Radel, & Crouse, 2018) in the growth of these rates over time.

These disparities may be due to several, potentially overlapping reasons. One reason may be demographic differences in drug use: given that the crack cocaine and opioid epidemics have disproportionately affected different segments of the population, the demographic make-up of children involved in the child welfare system due to parental substance use may have also shifted. However, factors such as differences in service access, visibility to the child welfare system, and availability of alternatives to foster care also play a role in producing these disparities. In addition, unclear legislative mandates in defining and identifying problematic parental substance use means that individual caseworkers and agencies have considerable latitude in deciding when parental substance use requires child welfare intervention, and whether that intervention entails removing a child from the home or not. Caseworkers determine whether or not parental substance use necessitates child welfare intervention based on the extent to which the use

contributes to a child's neglect and/or exposure to harm (Henry et al., 2018). A variety of factors influence whether or not a caseworker perceives a child to be at harm, and whether that harm is significant enough to remove the child, including the child's social location – sociodemographic characteristics like age and race/ethnicity (Ards et al., 2012; Dettlaff et al., 2011), as well as community characteristics like availability of substance abuse treatment services (Henry et al., 2018). Implicit beliefs about class and race may cause caseworkers and judges to label some types of parental substance use as problematic for a child's safety and wellbeing, but not others. Furthermore, different populations have differential access to substance abuse treatment and other services that may help them avoid contact with the child welfare system in the first place. Thus, demographic trends in substance use-associated foster care entry can reflect not only trends in substance use, but also who is most visible to and considered most in need of intervention by the child welfare system. To contribute to this understanding, this study analyzes trends in substance use-associated foster care entry by race/ethnicity, age, urbanization, and state using administrative foster care data from the 2001-2018 Adoption and Foster Care Analysis and Reporting System.

Age and Race

Racial disparities in child welfare system involvement are well-documented and their causes are sources of rigorous debate in the literature. Non-Hispanic Black and American Indian/Alaska Native children are particularly over-represented. According to 2016 estimates, 11.4% of American Indian/Alaska Native and 9.1% of Black children will be placed in foster care by age 18, compared to 5.0% of white children, 3.6% of Hispanic children, and 1.5% of Asian/Pacific Islander children (Yi, Edwards, & Wildeman, 2020). However, analyses of trends in foster care entries attributable to

parental substance use reveal somewhat different patterns of racial disproportionality. Non-Hispanic White and American Indian/Alaska Native children had the highest growth in foster care entries involving parental drug use between 2008 and 2017, while Black children had the lowest growth (Meinhofer et al., 2020). These increases may be in part attributable to differences in opioid usage by race/ethnicity (He, Phillips, & Sedivy, 2020), but these differences cannot fully explain these disparities. For example, opioid usage among Black adults is on the rise (Alexander, Kiang, & Barbieri, 2018; Lippold, Jones, Olsen, & Giroir, 2019), a trend which runs counter to Black children's relatively low rates of substance use-associated foster care entry. Whether a child enters foster care is not only a function of parental substance use, but also a function of a series of decision-making processes by multiple professionals, from the initial report of maltreatment, to the investigation, to hearings regarding the child's placement, that may or may not define parental substance use as child maltreatment.

In other words, differences in substance use-associated foster care entry rates by race/ethnicity also reflect differential responses to parental substance use both by caregivers as well as healthcare professionals, social workers, and judges. Low rates of substance use-associated foster care entry in certain communities of color may be due to strategic avoidance of the child welfare system (Fong, 2019). For example, Black families in particular may be more likely to rely on grandparents or other relatives for support when one or both parents are unable to care for their child (Brown, Cohon, & Wheeler, 2002). Undocumented Hispanic families may withdraw from institutions like social services and healthcare to avoid not only the child welfare system but also the possibility of deportation. In addition, the decision to remove a child due to parental substance use depends on the extent to which caseworkers and judges believe the substance use can be addressed. In areas without adequate services, caseworkers and

judges may be more likely to place a child in foster care versus allowing the child to stay at home while a parent receives services (Font & Maguire-Jack, 2015). Native American families in particular have high rates of unmet substance abuse and mental health needs (SAMHSA, 2012), which contribute to a greater likelihood of intervention by the child welfare system. Implicit racial bias on the part of caseworkers and judges may cause them to view substance use as more problematic for parents of color, particularly low-income parents of color, compared to white parents who engage in the same behaviors (Miller et al., 2013). On the other hand, as the dominant narrative of opioid addiction focuses on white adults (and largely ignores Black adults, who were disproportionately denied access to opioid medication), caseworkers may increasingly perceive white parents' substance use as more harmful. For these reasons and in line with previous studies, I hypothesize that the greatest growth in substance use-associated foster care entry rates will be among white and American Indian/Alaska Native children and lowest among Black children.

Furthermore, rates of substance use-associated foster care entry specifically by age have not been investigated. Infants ages 0-1 made up 26% of total foster care entries in 2018 (U.S. Department of Health & Human Services, 2020); the risk of foster care entry generally declines as a child gets older (Wildeman & Emanuel, 2014). One interpretation of differences in age at foster care entry is that maltreatment is more common at younger ages. Similarly, substance use-associated foster care entry rates could differ by child age if parents are more likely to use drugs at certain points in the child's life course. However, with the exception of some drugs like marijuana and binge-drinking, substance use tends to be chronic in nature, particularly as a strategy for ongoing pain or illness management (Hser, Longshore, & Anglin, 2007). Thus, if age-specific rates of substance use-associated foster care entry primarily reflected age-

specific rates of parental drug use, then rates of foster care entry would not strongly differ by child age.

A more likely scenario is that differences in foster care entry by child age reflect differences in the likelihood of contact with the child welfare system and in the decision to remove the child from the home. Given that caseworkers and judges make decisions about a child's placement largely based on the perceived level of harm and risk to the child (Cross & Casanueva, 2009), infants are overrepresented in the foster care system partly because they are viewed as particularly vulnerable. Parental substance use is commonly detected as a result of a positive toxicology screening or other evidence of prenatal exposure to substances at birth (Sanmartin, Ali, Lynch, & Aktas, 2020), thus a child's entrance into foster care due to parental substance use is more likely during infancy. In addition, by requiring healthcare professionals to report substance-exposed infants and for states to develop policies and procedures to address the needs of these infants, the reauthorization of the Child Abuse Prevention and Treatment Act in 2003 facilitates the administrative process of removing these children from the home.

However, parental substance use can also put older children at risk of child welfare involvement, such as through greater parental stress that increases the risk of physical maltreatment or witnessing domestic violence and a greater risk of injuries or illnesses related to physical exposure to drugs or drug paraphernalia (Smith & Wilson, 2016). Little research has examined the extent to which children older than infancy have comprised the recent increases in substance use-associated foster care entry rates; in other words, it is unclear the extent to which child welfare agencies are detecting problematic substance use among parents with older children and placing older children into foster care for this reason. Examining trends in the age of children when entering foster care due to parental substance use is important because it also reveals caseworkers' and

judges' perceptions regarding when parental substance use is a large enough threat to a child's safety and wellbeing to warrant intervention. Given the lack of clear procedures for detecting substance use outside of a medical setting, making the case for an older child's removal from the home due to parental substance use may be less straightforward than for infants. I hypothesize that growth in substance use-associated foster care entry rates will be highest for infants, given policy mandates and existing procedures to identify substance-exposed infants, but that all age groups will have experienced an increase in growth as well.

It is also unclear how trends in substance use-associated foster care entry differ by both age and race. The federal legislation requiring health care providers to report substance use-exposed infants to child protective services does not outline specific procedures for identifying substance exposure. Testing procedures among healthcare providers vary widely and can include biological tests (e.g., urine toxicology screening, blood test, or meconium test) and/or verbal screenings. Inconsistency in testing procedures, as well as the reliance on targeted instead of universal testing, can introduce bias in who gets tested and reported (Burke, 2007). Studies report conflicting evidence as to whether or not Black infants, who are disproportionately represented in the foster care system, are also disproportionately targeted for prenatal drug testing and reporting (Chasnoff, Landress, & Barrett, 1990; Roberts & Nuru-Jeter, 2012; Putnam-Horstein, Prindle, & Leventhal, 2016). These conflicting results may be due to changes in racialized beliefs about parental substance use over time. In an early study on racial disproportionality in the child welfare system, child welfare workers and parents reported that doctors were more likely to screen Black mothers for drugs, particularly if they appeared to be low-income (Chibnall et al., 2003). In the context of the opioid epidemic, however, healthcare professionals may be more likely to screen white, working-class

women who fit the profile of the stereotypical opioid user. Thus, I hypothesize that white infants will have the highest growth in substance use-associated foster care entry rates compared to other infants.

Racial disparities among older children may also arise, but for different reasons. Unconscious bias on the part of caseworkers and judges can result in both greater surveillance, as may be the case with infants, but also under-protection. One way in which Black children face disparate treatment is through the process of adultification, or being perceived and treated as at a more mature developmental stage than is appropriate (Dumas & Nelson, 2016; Epstein, Blake, & González, 2017). If caseworkers perceive Black children as more mature and independent than is developmentally appropriate, they may also be less likely to consider them at risk of harm and in need of intervention in the presence of substance-using parents (Henry et al., 2018) than white children of the same age. In addition, there is significant overlap between children involved with the child welfare and juvenile justice systems. Another reason that older Black children in particular may be less likely to enter foster care due to parental substance use is that Black youth are disproportionately incarcerated (Davis & Sorenson, 2013); in other words, Black youth who may have otherwise been placed into foster care were incarcerated instead, particularly if parental substance use leads to greater adolescent substance use and delinquency. Accordingly, I hypothesize that among older age groups, Black children will be underrepresented in substance use-associated foster care entries compared to children of other races.

Level of Urbanization and Geography

As evidence accrues demonstrating that the opioid epidemic is driving increases in foster care entry rates (Waite, Greiner, & Laris, 2018), these increases likely reflect

geographic differences in opioid usage. Specifically, rural areas may have experienced greater growth in substance-use associated foster care entry rates compared to more urban areas. Other studies have found positive associations between drug-related indicators (e.g., opioid overdose deaths) and foster care caseloads (Ghertner et al., 2018), which are particularly robust in rural areas (Orsi et al., 2018). Precise estimates of substance use-associated foster care entry rates stratified by urbanicity, however, have not been published. Rates may be higher in rural compared to more urban areas due to geographic differences in substance use. Opioid misuse in particular is much more common in rural areas, in part due to the lack of healthcare resources for chronic pain management and more general socioeconomic vulnerability (Palombi et al., 2018). Growth in rates of neonatal abstinence syndrome, which indicates maternal opioid usage during pregnancy, was twice as large in rural versus urban counties between 2004 and 2013 (Villapiano et al., 2017). In addition to opioids, methamphetamine usage is also disproportionately high in rural areas, which poses particular threats to child health and safety compared to other drug types (Sheridan, 2014). Rural areas also have fewer substance use treatment services compared to urban areas, a challenge which is further compounded by a lack of public transportation, health insurance coverage, and coordination between substance use treatment providers and child welfare agencies (Clary, Ribar, & Weigensberg, 2020). Less access to substance use treatment means that rural parents are less likely to receive treatment that would help them avoid coming into contact with the child welfare system; furthermore, once families are in contact with the child welfare system, children who may have been able to remain at home in areas with more robust social services available enter foster care instead (Font & Maguire-Jack, 2015).

Looking beyond geographic differences in substance use and abuse, states with greater rural populations are more likely to have laws that criminalize prenatal substance

use or specifically define prenatal substance use as child maltreatment (Faherty et al., 2019; Sanmartin et al., 2020). General socioeconomic vulnerability endemic to rural areas – such as poverty, mental health concerns, and a lack of employment, affordable housing, and access to the internet (Palombi et al., 2018; Clary et al., 2020) – put parents both at risk of substance misuse and child welfare system involvement. Thus, I hypothesize that growth of substance use-associated foster care entry rates will be highest in rural areas and in states with a large rural population.

Rates of substance use-associated foster care entry may additionally vary by race/ethnicity and/or age across levels of urbanization, a possibility which has not been adequately explored in previous research. Breaking down trends by both age and urbanization as well as by both race/ethnicity and urbanization can provide further evidence regarding which parents are coming into contact with the child welfare system and, once in contact, which parents' substance use is being defined as child maltreatment. In terms of variation by race/ethnicity, one study found that the association between racial disproportionality in child maltreatment rates and urbanization was curvilinear, such that racial disparities were highest in the most densely and least densely populated areas, i.e. large metropolitan and rural communities (Maguire-Jack et al., 2015). On the one hand, non-Hispanic Black, Hispanic, and Native American/American Indian children might have less growth in their substance use-associated foster care entry rates in rural compared to more urbanized areas due to a greater withdrawal from public institutions. For example, Black residents of rural counties may be less likely to contact child protective services if they have little trust that agencies will be responsive to their needs (Smith, Kay, & Pressley, 2018). Indeed, low rates of maltreatment in high-poverty, majority Black, rural areas may stem from a lack of child welfare resources (Smith & Pressley, 2019), thus Black children may have lower rates of substance use-associated

foster care entry in rural compared to their counterparts in urban areas. Undocumented Hispanic families in particular may have lower rates of substance use-associated foster care entry rates due to lower utilization of public services and thus less contact with professional mandatory reporters (Davidson, Morrissey, & Beck, 2019). This avoidance may be due to fear of deportation and/or policies that prevent access for undocumented immigrants, and undocumented families may be especially less likely to engage in the public sector in rural counties along the border.

On the other hand, substance use-associated foster care entry rates might be greater in rural areas for marginalized racial groups compared to their counterparts in more metropolitan areas. Compared to those in urban settings, racial minorities may be more isolated from members of their own racial groups in rural areas. This lack of social capital may contribute to greater stress, poverty, and drug use, all of which can contribute to a greater likelihood of child welfare system involvement (Hutchinson et al., 2009). In rural areas that are more likely to be predominantly white, Black, Hispanic, and Native American parents may face discrimination and hostility (Lichter, 2012) in the form of greater reporting and more punitive responses by the child welfare system (Ards et al., 2012; Miller et al., 2013). Additionally, Black, Hispanic, and Native American parents may be distrustful of white caseworkers. Given that perceptions of cooperation and compliance with case plans are major factors in the decision to remove a child to foster care (Wulczyn, 2004), Black, Hispanic, and Native American children may be more likely to be removed in rural areas where these families are more likely to be matched with a white caseworker. For the above reasons I hypothesize that Black, Hispanic, and Native American/Alaska Native children will have the largest growth in rates of parental substance use-associated foster care entry in rural areas compared to white children.

In terms of differences by age and level of urbanization, growth in rates among infants may be the highest in rural areas. Hospitals vary considerably in their protocols for detecting prenatal substance use; larger hospitals who serve a more affluent and white patient population have more detailed and specific protocols (Zellman, Fair, Houbé, & Wong, 2002). Thus, hospitals with greater resources in metropolitan areas may not have experienced as much of an uptick in prenatally exposed infants. In contrast, over this time period, rural hospitals may have made more extensive changes to their testing protocols, which would lead to the appearance of greater growth in substance use-associated foster care entry rates among infants. In addition, if older children, particularly Black children, are less likely to enter foster care because they are already in correctional custody, then growth in substance use-associated foster care entry rates among adolescents will be the lowest in metropolitan areas where rates of youth incarceration are highest (Pupo & Zane, 2021). Thus, I hypothesize that among infants and adolescents, the growth in these rates will be highest in rural areas and lowest in metropolitan areas.

The Current Study

The current study uses administrative foster care data and population estimates from the U.S. Census Bureau to calculate yearly rates of substance use-associated foster care entry and the proportion of foster care entries attributable to parental substance use by child race/ethnicity, child age, and level of urbanization. In addition, the current study presents the percent change in these rates over time by age and race/ethnicity; age and urbanization; race/ethnicity and urbanization; and by state.

DATA, MEASURES, AND METHODS

Data

Data on foster care entries came from the 2001-2018 annual Foster Care Files from the Adoption and Foster Care Analysis and Reporting System (AFCARS). The AFCARS is a federally mandated data collection effort and is thus the most comprehensive source of data on the foster care population in the United States. Data collection began in 1995; however, 2001 was the first year that all states participated. States must collect case-level data on all children in foster or adoptive care and submit this data twice yearly to the Children's Bureau for processing. Data collected includes information on child and caregiver demographics, case plans, service goals, removal circumstances, and placement history. The Children's Bureau then cleans and compiles this data into a single foster care file per year with one record per child. States must report data on all children for whom a state child welfare agency has responsibility for their placement, care, or supervision, including any children who have been removed from their home for more than 24 hours. Children who live outside of their parents' home without formal involvement of a public child welfare agency, such as children who are adopted through private or tribal agencies, are not included in this data (Children's Bureau, 2019).

Population data for calculating rates came from the U.S. Census Bureau. Due to differing availability of specific variable breakdowns needed for calculating rates separately by race/ethnicity, age, and degree of urbanization, I used two different sources for population estimates. The first source of population estimates, which were used for all analyses that did not incorporate degree of urbanization, was the Bridged-Race Population Estimates available from the National Center for Health Statistics. These files contain annual intercensal or postcensal estimates of the population by county, single

year of age, bridged race (White, Black or African American, American Indian or Alaska Native, Asian or Pacific Islander), Hispanic origin (not Hispanic or Latino, Hispanic or Latino), and sex, from 2000 to 2019 (National Center for Health Statistics, 2012; 2020). The second source of population estimates was the Vintage 2019 county population estimates by age and race/ethnicity for years 2010 to 2019 available from the U.S. Census Bureau (2020). This data was then merged with the 2013 Urban-Rural Continuum Codes for each county available from the U.S. Department of Agriculture (Economic Research Service, 2021). The primary difference between these two sets of estimates is that the first contains single years of age and thus can be limited to ages 0-17, while the second uses five-year age groupings (e.g., 0-4, 5-9, 11-14, and 15-19 years old) and thus represents the population of youth ages 0-19. Depending on year and state, youth ages 18-19 may or may not be eligible for foster care services.

Between 2001 and 2018, there were 12,992,451 foster or adoptive care case records (note that each child will have one record per year they were in foster or adoptive care). Prior to 2005, some duplicate records were retained; these 8,000 records were dropped. The sample was limited to foster care entrances only (N = 4,979,547) to avoid double-counting youth who remained in foster care for multiple years. Next, 3,215 youth with an unknown age or age above 20 years old were excluded, as were 30,190 youth in Puerto Rico, as population data for Puerto Rico is not available. These exclusions resulted in a final sample of 4,946,142 foster care entrances among youth ages 0-19. For estimates not involving the Urban-Rural Continuum Codes, 19,675 youth ages 18-19 were excluded, resulting in a sample of 4,926,467 foster care entrances.

Measures

The AFCARS data contains fifteen dichotomous variables indicating the reason(s) for a child's removal from the parents' home; a child could have multiple reasons associated with their removal. A case was considered to be *substance use-associated* if one of the reasons was parental drug abuse, or if one of the reasons was child drug abuse and the child was younger than one year old (indicating prenatal drug exposure). Child's *race/ethnicity* came from a derived variable with eight categories: non-Hispanic white, non-Hispanic Black, non-Hispanic American Indian/Alaska Native, non-Hispanic Asian, non-Hispanic Hawaiian/other Pacific Islander, non-Hispanic multiracial, Hispanic of any race, and missing or unknown. Non-Hispanic Asian and non-Hispanic Hawaiian/other Pacific Islander were combined into a single category, as were non-Hispanic multiracial and other/unknown, in order to be consistent with Census population race/ethnicity categories. Child's *age* was their age at their most recent entrance into foster care. The *degree of urbanization* was measured by the 2013 Rural-Urban Continuum Code associated with the county where the agency responsible for the child's care was located. The Rural-Urban Continuum Codes were created by the Economic Research Service of the U.S. Department of Agriculture and categorize counties according to their degree of urbanization and adjacency to metro areas. The codes contain nine categories ranging from 1 (counties in metro areas with a population of one million or more) to 9 (completely rural or less than 2,500 urban population, not adjacent to a metro area). I collapsed this variable into four categories (Okpych, 2015): large metropolitan (metropolitan counties with one million or more people), metropolitan (metropolitan counties up to one million people), nonmetropolitan (nonmetropolitan counties with an urban population of at least 2,500 people), and rural (counties with an urban population

less than 2,500 people). For more details on the history and creation of these codes, see (U.S. Department of Agriculture, 2013).

Additional child variables not used in the main analyses but included in the descriptive statistics were disability status, removal manner, and additional maltreatment types. *Disability status* was a categorical variable indicating if a child was ever clinically diagnosed by a qualified professional as having an intellectual disability, visual or hearing impairment, physical disability, emotional disability, or any other medically diagnosed condition requiring special care. Responses for this variable were "yes", "no", or "not yet determined". *Removal manner* referred to whether or not the child's removal from their parents' home was court-ordered, voluntary (i.e., an official voluntary placement agreement was executed between the caregiver and agency), or not yet determined. Lastly, *maltreatment types* were dichotomous variables indicating if the following reasons factored into the child's removal from the home: physical abuse, sexual abuse, neglect, parental alcohol abuse, parental drug abuse, child alcohol abuse, and child drug abuse.

Methods

For descriptive purposes, I first calculated rates of foster care entry for all reasons by year and race/ethnicity. Next, I calculated these rates specifically for foster care entry due to parental substance use for each year by age, race/ethnicity, and level of urbanization. Population data for the appropriate year, age grouping, race/ethnicity, state, and level of urbanization served as the denominator; the numerator came from tabulations of the AFCARs data. I also calculated the proportion of foster care cases attributed to parental substance use out of all foster care entries per year, again separately by age, race/ethnicity, and level of urbanization. Last, I calculated yearly rates of substance-use

associated foster care entry for all pairwise combinations of age grouping, race/ethnicity, and level of urbanization. In order to simplify the presentation of these trends, I calculated the percent change in rates between 2001 and 2018 or 2010 and 2018. Prior to 2010, 22.3% of cases were missing Urban-Rural Continuum Code data (after 2009, only 0.01% cases were missing this data). In addition, 2010 was the first year that all states reported at least one substance use-associated foster care entrance. Thus, for the analyses involving degree of urbanization, rates are presented only for years 2010 to 2018. Finally, I calculated the percent change in rates between 2010 and 2018 separately by state. The 0.01% of cases missing data on degree of urbanization and 8.7% of cases with other or unknown race/ethnicity were included in calculations of the overall national and age-specific rates of substance use-associated foster care entry, but excluded from urbanization- or race/ethnicity-specific estimates.

RESULTS

Descriptive Statistics

Table 2.1 displays demographic and case-related characteristics for foster care entries between 2001 and 2018 by whether or not parental substance use was associated with a child's removal from the home. All differences between substance use-associated foster care entries and foster care entries due to other reasons were statistically significant at $p < 0.05$. Between 2001 and 2018, 33.16% of foster care entries were associated with parental substance use. Children who were removed from the home due to substance use were younger; more likely to be female, non-Hispanic white, non-Hispanic American Indian/Alaska Native, or of other/unknown race; and less likely to be non-Hispanic Black, non-Hispanic Asian/Pacific Islander/Native Hawaiian, or Hispanic compared to children who were removed from the home due to other reasons. Foster care entries

involving parental substance use were less common in large metropolitan counties and more common in metropolitan, non-metropolitan urban, and rural counties than cases not involving parental substance use. The lower half of Table 2.1 displays additional case characteristics that were not included in the main analyses but are included here for descriptive purposes. Substance-use associated foster care entries were less likely to involve a clinically diagnosed child disability and were more likely to be court-ordered than foster care entries due to other reasons. Compared to foster care entries not associated with parental substance use, cases involving parental substance use were less likely to also involve physical or sexual abuse, but more likely to involve neglect, parental alcohol abuse, and child alcohol or drug abuse. (The substance use-associated cases that did not have parental drug abuse as a maltreatment type were coded as substance use-associated because they involved child drug abuse and the child was younger than one year old, suggesting prenatal drug exposure.

Table 2.1. Descriptive Statistics of Population, by Reason for Foster Care Entry

	Foster Care Entries due to Other Reasons	Substance Use-Associated Foster Care Entries	Percent Missing
Sociodemographic characteristics			
Age at most recent removal	8.17 (5.89)	5.07 (4.97)	0.00%
Race/ethnicity			
Non-Hispanic white	42.86%	53.35%	0.00%
Non-Hispanic Black	26.67%	18.31%	0.00%
Non-Hispanic American Indian/Alaska Native	2.14%	2.30%	0.00%
Non-Hispanic Asian/Pacific Islander/Native Hawaiian	1.18%	0.53%	0.00%
Hispanic	19.57%	16.81%	0.00%
Other/unknown	7.58%	8.70%	0.00%
Male	51.66%	50.70%	0.03%
Female	48.34%	49.30%	0.03%
Urbanicity			
Large metropolitan	48.95%	42.14%	11.72%
Metropolitan	33.03%	35.76%	11.72%
Non-metropolitan urban	16.14%	19.88%	11.72%
Rural	1.87%	2.22%	11.72%
Additional case characteristics			
Diagnosed disability			
Yes	20.06%	13.24%	8.32%
No	58.99%	68.82%	8.32%
Not yet determined	20.95%	17.94%	8.32%
Removal manner			
Voluntary	5.79%	3.38%	4.43%
Courted ordered	90.86%	94.79%	4.43%
Not yet determined	3.35%	1.83%	4.43%
Maltreatment type			
Physical abuse	15.92%	12.23%	3.22%
Sexual abuse	5.61%	3.06%	3.22%
Neglect	53.13%	59.37%	3.22%
Parental alcohol abuse	4.24%	12.56%	3.22%
Parental drug abuse	0.00%	99.01%	3.22%
Child alcohol abuse	0.90%	1.06%	3.23%
Child drug abuse	2.11%	5.80%	3.23%
N	3,714,352	1,231,790	

Age and Race/Ethnicity

Figure 2.1 shows that rates of foster care entry for all reasons, not just those involving substance use, were mostly stable with a slight decline between 2001 and 2018. Nationally, foster care entry rates declined 11.20% from 39.91 to 35.45 entries per 10,000 children from 2001 to 2018. Hispanic, Black, and Asian/Pacific Islander/Native Hawaiian children experienced even greater declines at 15.37%, 29.87%, and 57.41%, respectively, while American Indian/Alaska Native children experienced a smaller decline of 10.39%. The only racial/ethnic group to experience an increase was white children at 7.54%.

Figure 2.2 plots the rates of foster care entry specifically associated with substance use per 10,000 children by race/ethnicity between 2001 and 2018. In contrast to the relatively stable rates of foster care entry due to all reasons, rates of substance use-associated foster care entry increased by 128.01% from 5.68 entries in 2001 to 12.95 entries per 10,000 children in 2018. The national trend, however, obscures dramatic differences by race/ethnicity. Asian/Pacific Islander/Native Hawaiian children had the lowest rates of substance use-associated foster care entry, staying below two entries per 10,000 children and experiencing a decline in rates of 22.80% between 2001 and 2018. Non-Hispanic Black children had the most consistent rates across this time period with a decline of 2.84%; in 2001, Black children's rates of substance use-associated foster care entry were twice the national average at 11.44 entries per 10,000 children, but by 2018 their rate was below the national average at 11.12 entries. All other race/ethnic groups experienced an increase in rates. Hispanic children had rates consistently below the national average but experienced an increase of 121.51% from 3.91 entries to 8.67 entries per 10,000 children between 2001 and 2018. Non-Hispanic white children experienced the greatest growth – a 232.54% change from 4.21 entries per 10,000 children in 2001 to 14.01 in 2018. American Indian/Alaska Native children had the second highest growth in

substance use-associated foster care entry rates at 170.12%, but the highest absolute increase from 12.57 to 33.97 entries per 10,000 children. In 2018, American Indian/Alaska Native children had 2.62 times more entries than the national average and 32.95 times more entries than Asian/Pacific Islanders, the group with the fewest entries.

Figure 2.1. Rates of Overall Foster Care Entry per 10,000 Children 2001-2018, by Race/Ethnicity

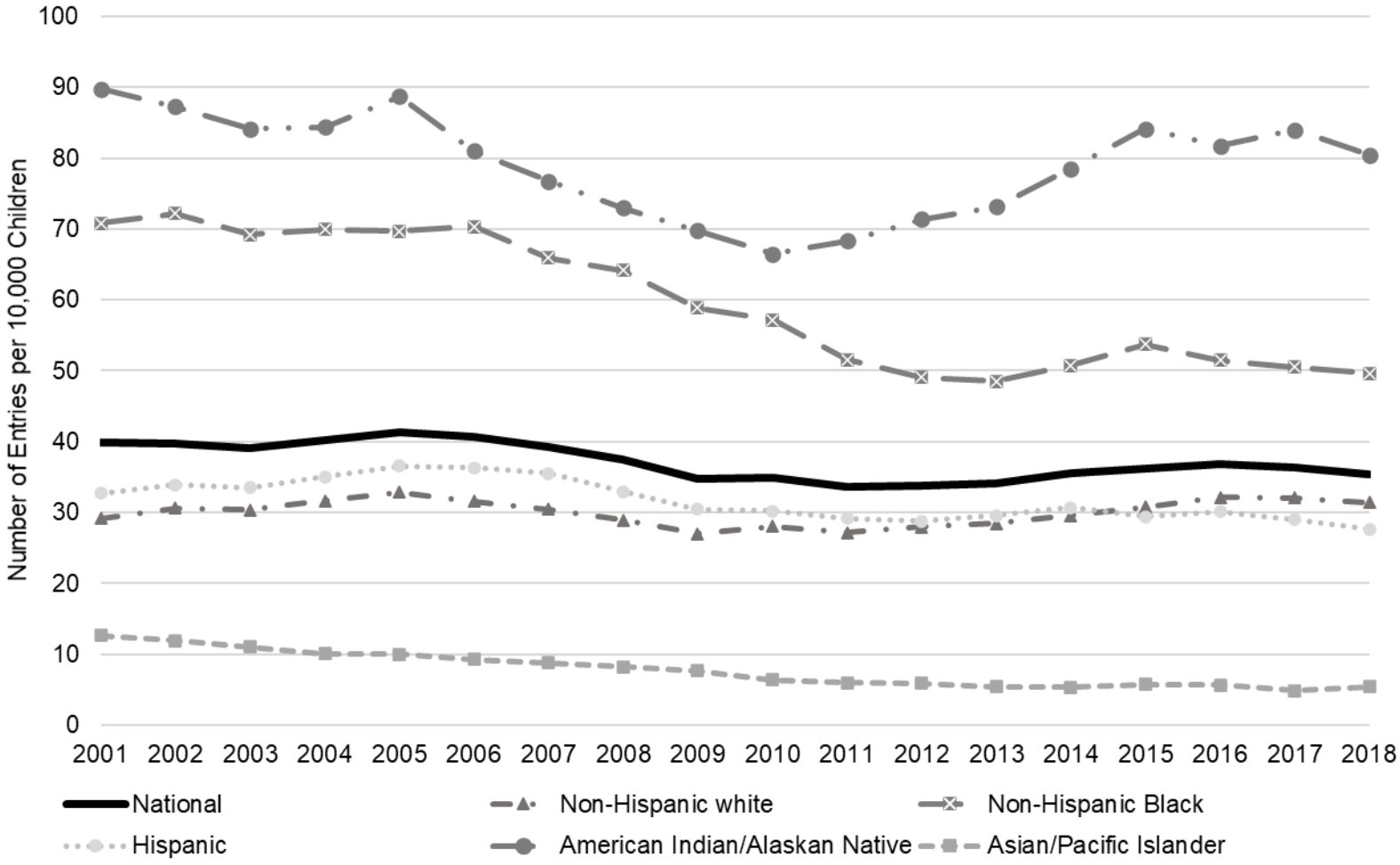


Figure 2.2. Rates of Substance Use-Associated Foster Care Entry per 10,000 Children 2001-2018, by Race/Ethnicity

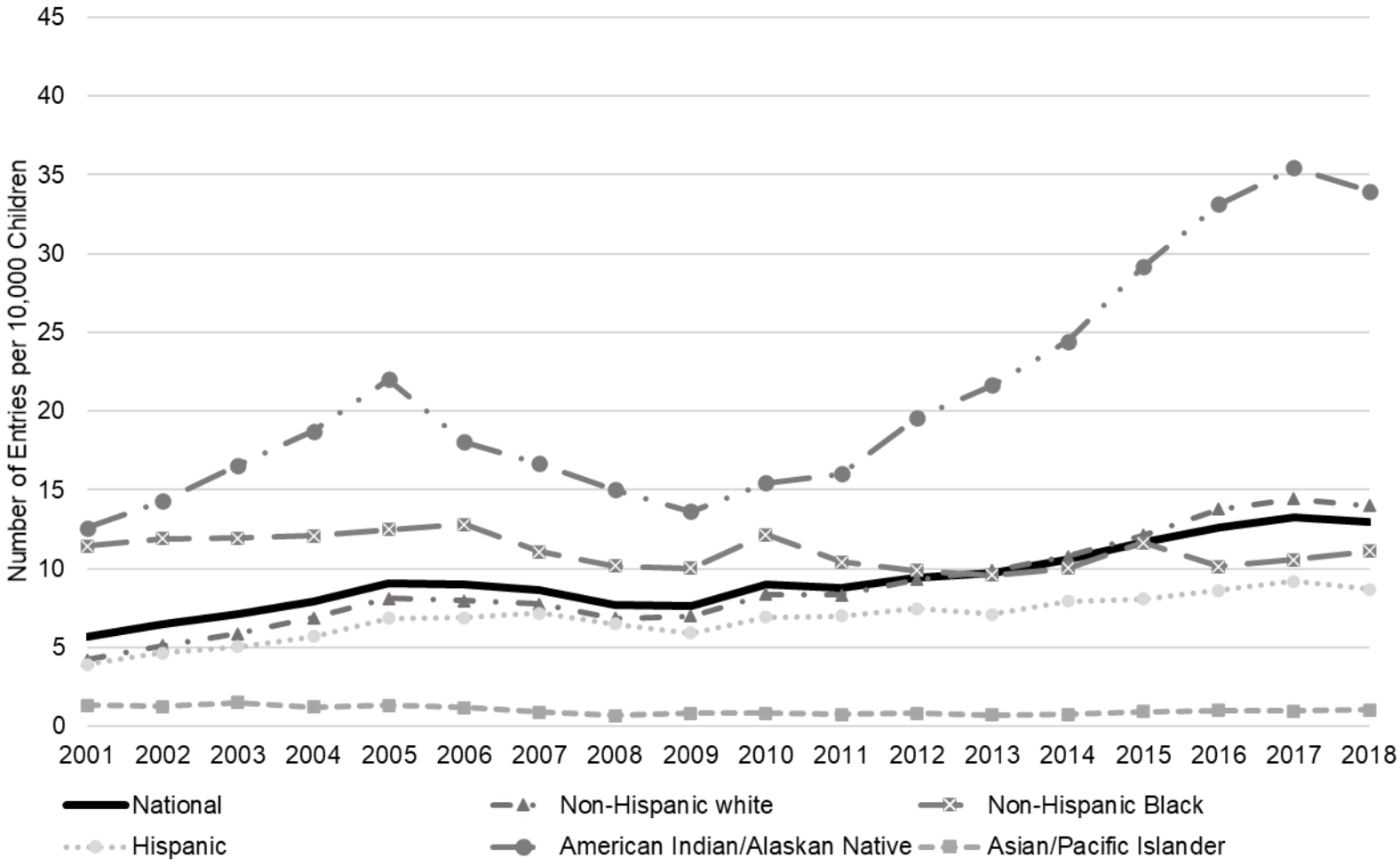
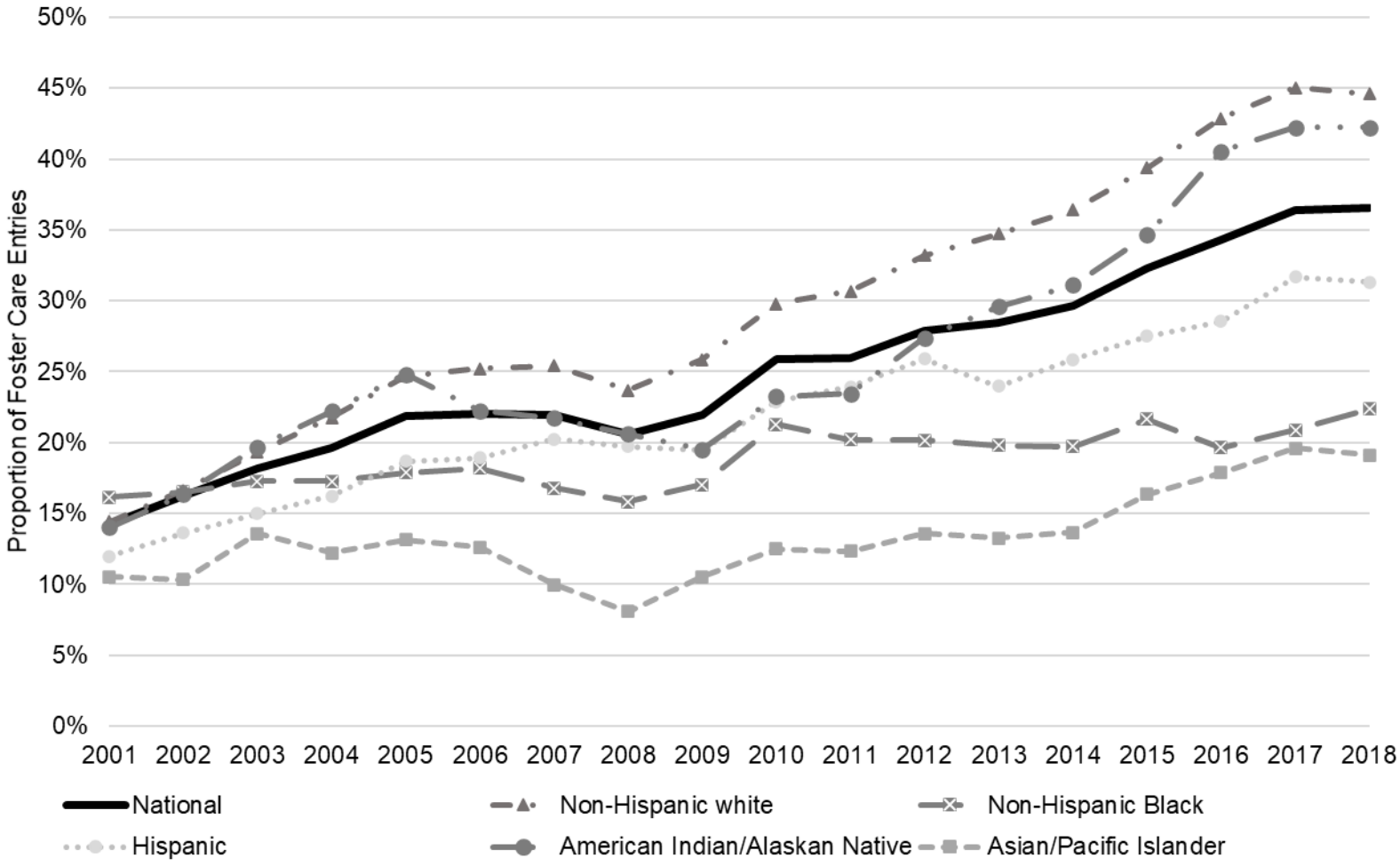


Figure 2.3 shows the proportion of foster care entries associated with parental substance use out of all foster care entries by race/ethnicity for years 2001-2018. This proportion increased overall by 156.77% during this time period from 14.22% to 36.53%. All race/ethnic groups experienced an increase, although to a varying degree. Although Non-Hispanic Black and Asian/Pacific Islander/Native Hawaiian experienced a decline in rates, the proportion of foster care entrances attributable to parental substance use increased by 38.54% and 81.27%, respectively. In addition to having the largest increase in rates, Non-Hispanic white children also had the largest increase in their proportion of foster care entrances attributable to parental substance use at 209.24%. American Indian/Alaska Native children, similarly, experienced a threefold increase (201.44%) in their proportion of foster care entries during this time period. Both white and American Indian/Alaska Native children had a larger proportion of foster care entries attributable to parental substance use than the national average, at 44.62% and 42.23%, respectively. Not only are non-Hispanic white and American Indian/Alaska Native children experiencing increases in rates of substance use-associated foster care entry, but these cases are also making up an increasing proportion of their foster care populations.

Figure 2.3. Proportion of Foster Care Entries due to Parental Substance Use 2001-2018, by Race/Ethnicity



Figures 2.4 and 2.5 plot the same analyses as Figures 2.2 and 2.3, but stratified by age groups instead of race/ethnicity. As can be seen in Figure 2.4, infants (ages 0-1 years) had the highest rates of substance use-associated foster care entry, which is true of foster care entry in general (Wildeman & Emanuel, 2014). In 2018, infants had over three times the rate of substance use-associated foster care entry compared to the national average. All age groups experienced growth in rates between 2001 and 2018; infants experienced the highest growth at 158.96%, followed by 2-5 year olds at 151.35%. As age increased, the rates of substance use-associated foster care entry and growth in these rates decreased, although growth was still positive at 113.98%, 79.14%, and 59.77%, respectively, for youth ages 6-10, 11-14, and 15-17. Figure 2.5 shows that every age group experienced at least a doubling in the proportion of foster cases attributable to parental substance use between 2001 and 2018. Although 11-14 and 15-17 year olds had the lowest proportions of foster cases attributable to foster care throughout this time period, they experienced the most growth at 170.93% and 168.69%, respectively. Infants, despite having the largest growth in rates, had the lowest growth in the proportion of foster care entries attributable to parental substance use at 108.78%, followed by 6-10 and 2-5 year olds at 131.42% and 141.17%, respectively. By 2018, parental substance use-associated cases made up 49.34% of foster care entries among infants, compared to 12.64% among 15-17 year olds.

Figure 2.4. Rates of Substance Use-Associated Foster Care Entry per 10,000 Children 2001-2018, by Age Group

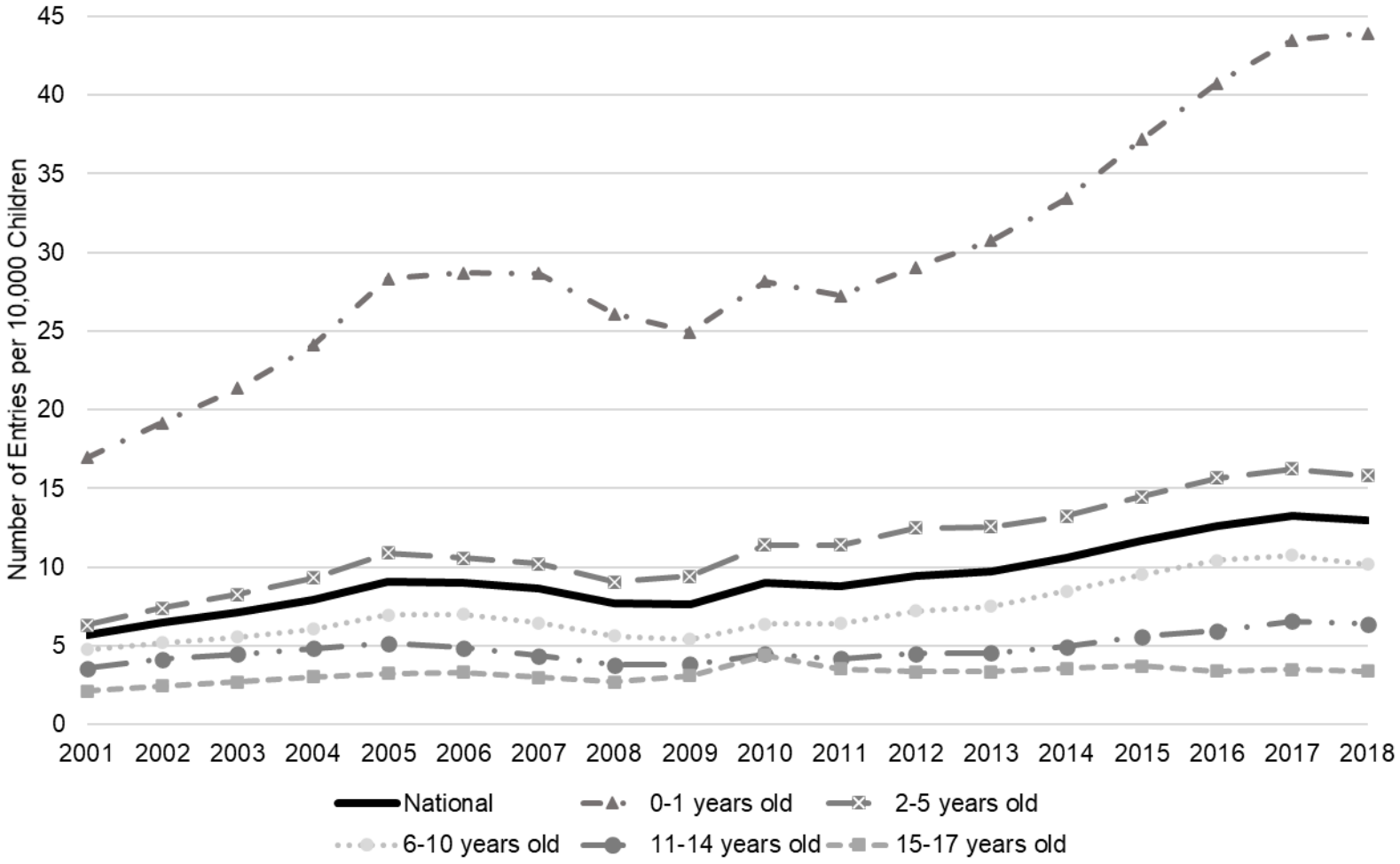


Figure 2.5. Proportion of Foster Care Entries due to Parental Substance Use 2001-2018, by Age Group

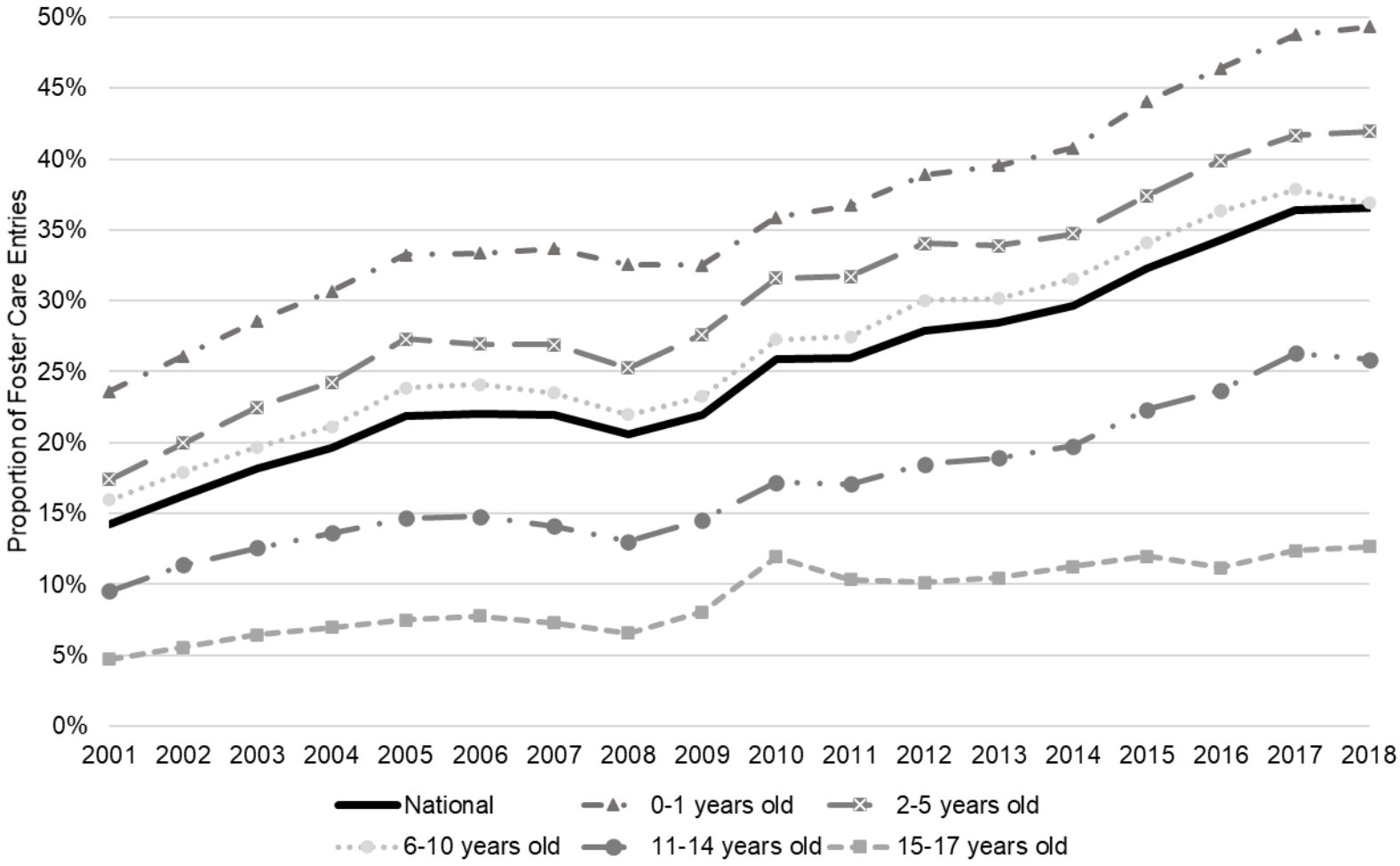
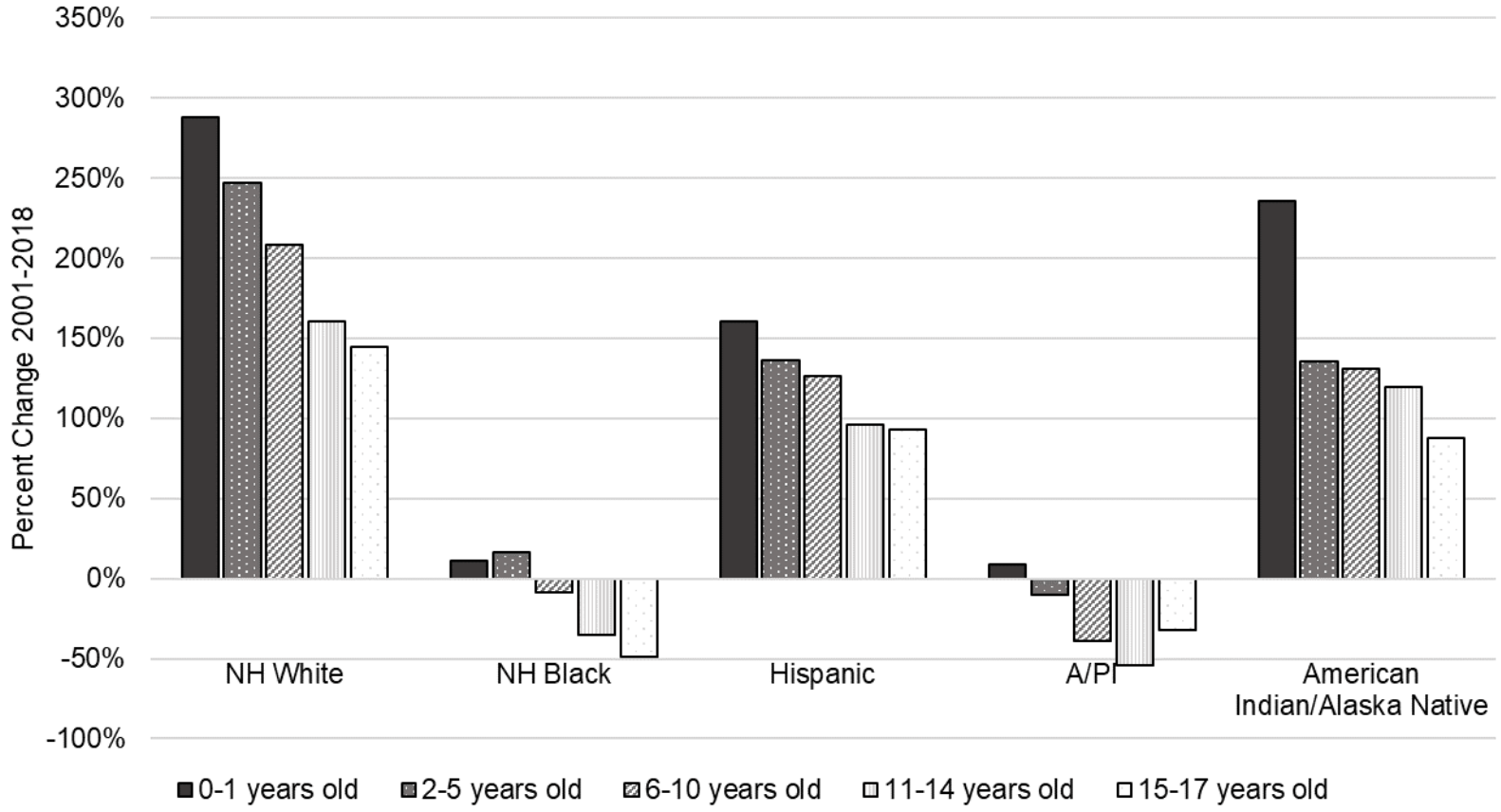


Figure 2.6 displays the percent change in substance use-associated foster care entry rates between 2001 and 2018 stratified by both age group and race/ethnicity. Non-Hispanic white infants had the highest growth at 288.14%, followed by non-Hispanic white 2-5 year olds at 246.91%, and American Indian infants at 235.52%. Non-Hispanic white, Hispanic, and American Indian youth experienced growth across all age groups. As shown in Figure 2.1, non-Hispanic Black and Asian/Pacific Islander youth experienced a decline in rates overall, but there were small increases specifically among infants for both races and also among non-Hispanic black children ages 2-5. The only race/ethnicity and age groups that experienced declines were non-Hispanic Black youth ages 6-10, 11-14, and 15-17, and Asian/Pacific Islander youth ages 2-5, 6-10, 11-14, and 15-17.

Figure 2.6. Percent Change in Rates of Substance Use-Associated Foster Care Entry 2001-2018, by Age Group and Race/Ethnicity



Note: NH = Non-Hispanic, A/PI = Asian/Pacific Islander.

Urbanization, Geography, Age, and Race/Ethnicity

The next set of figures stratifies substance use-associated foster care entry rates and proportions by level of urbanization, as measured by the Rural-Urban Continuum Code. Note that these figures differ from the previous ones in two ways. First, they plot trends between 2010 and 2018 instead of 2001 and 2018, due to large amounts of missing data on Rural-Urban Continuum Codes in the AFCARS prior to 2010. Second, all rates are slightly lower than those shown in previous figures due to the inclusion of 18 and 19 year olds in the numerators and denominators. For example, the rate of substance use-associated foster care entry among youth ages 0-19 in 2018 was 11.61 (shown in Figure 2.7) compared to 12.95 entries among in 2018 youth ages 0-17 (shown in Figure 2.2). This difference reflects the fact that 18-19 year olds have lower-than-average rates of substance use-associated foster care entry.

Figures 2.7 and 2.8 plot the rate and proportion, respectively, of substance use-associated foster care entry separately for rural, non-metropolitan urban, metropolitan, and large metropolitan counties between 2010 and 2018. Counties of all types experienced increases in the rates and proportions during this time; however, differences by level of urbanization were quite pronounced. Rural areas had the highest level of growth in both rates (128.24%) and proportion (79.40%) of cases attributable to parental substance use between 2010 and 2018. As the level of urbanization increased, rates and proportions of substance use-associated foster care entry tended to decrease. Non-metropolitan urban areas had similar levels of rates and growth in these rates as rural areas. In 2018, rural areas had 24.24 entries per 10,000 children, compared to 22.53 entries per 10,000 children in non-metropolitan urban areas. Similarly, in 2018, substance use-associated foster care entries made up 44.75% of foster care entries in rural areas and

44.29% in non-metropolitan urban areas. Metropolitan counties experienced half the growth in rates compared to rural counties (58.24% versus 128.24%), although their rates and proportions were slightly above the overall national estimates. Large metropolitan counties (i.e., counties with more than one million people) were the only counties to have rates of substance use-associated foster care entry and proportions of entries attributable to parental substance use below the national estimates. Between 2010 and 2018, growth in these rates was only 7.86% for large metropolitan counties (compared to 128.24% for rural counties, areas with the largest growth). In 2018, large metropolitan counties had less than a third of the number of substance use-associated foster care entries per 10,000 children than in rural counties (7.45 versus 24.24 entries). Similarly, in 2018, substance use-associated foster care entries made up 30.26% of foster care entries in large metropolitan counties compared to 44.75% in rural counties.

Figure 2.7. Rates of Substance Use-Associated Foster Care Entry per 10,000 Children 2010-2018, by County Level of Urbanization

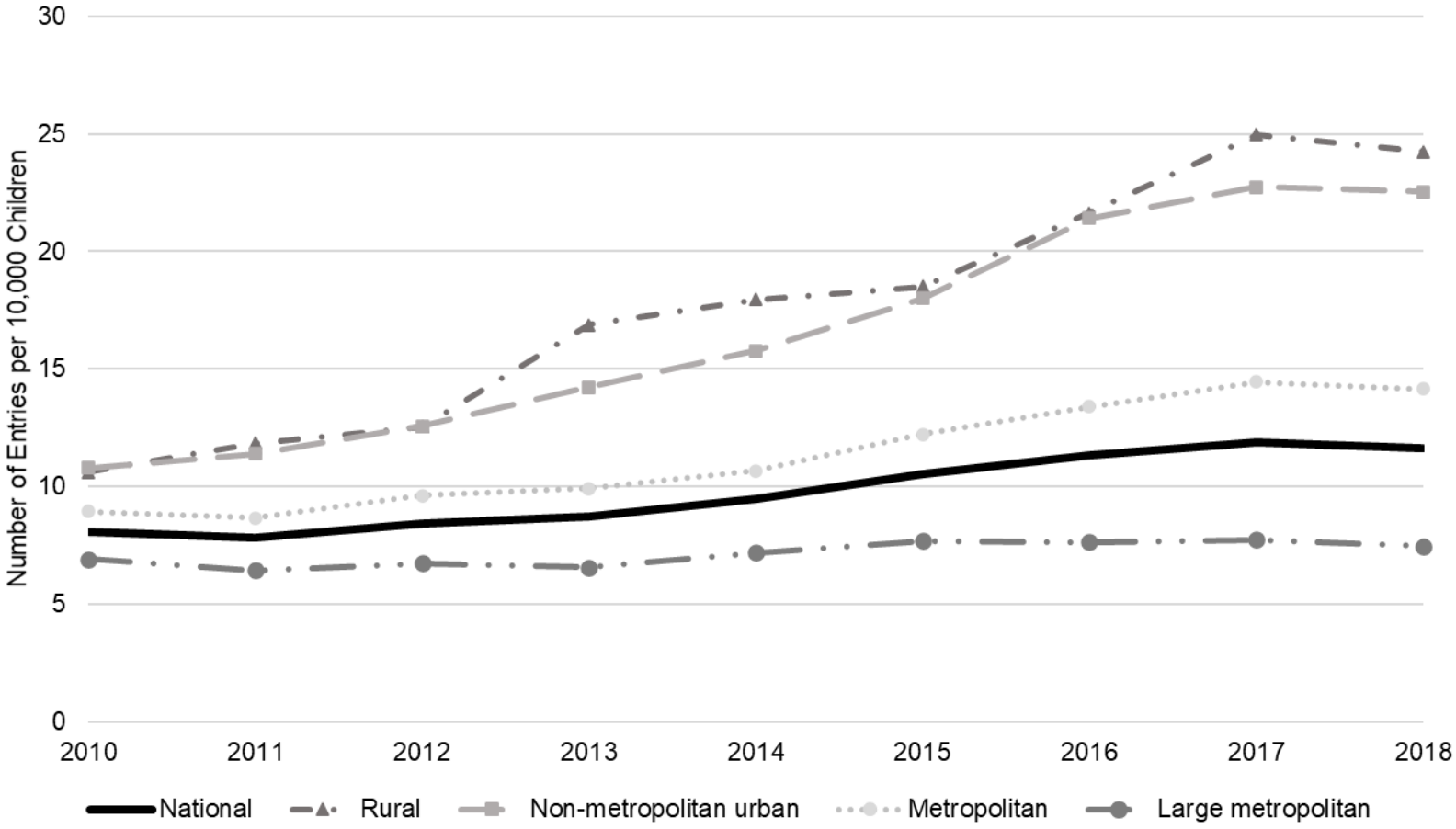
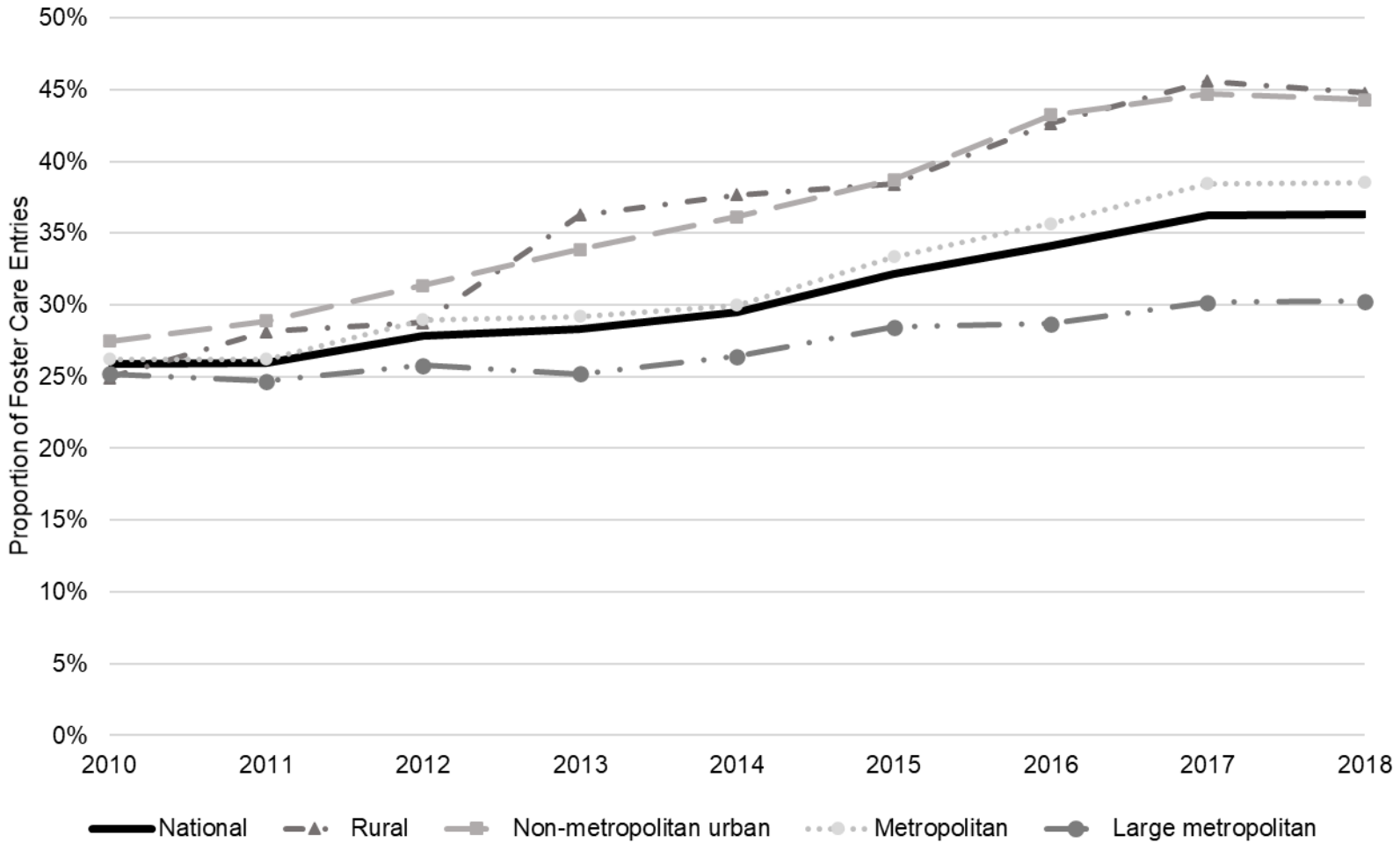


Figure 2.8. Proportion of Foster Care Entries due to Parental Substance Use 2010-2018, by County Level of Urbanization



Figures 2.9 and 2.10 further break down these trends by age and race/ethnicity, respectively, to examine demographic variability in this change. As can be seen in Figure 2.9, rates of substance use-associated foster care entry increased in all age groups in metropolitan, non-metropolitan urban, and rural areas. The greatest increases were among youth ages 5-9 and 10-14 in rural areas (142.16 and 154.77%, respectively), followed by youth ages 10-14 in non-metropolitan urban areas (132.24%). The only decreases in rates were among youth ages 10-14 and 15-19 in large metropolitan counties (-2.16% and -65.36%, respectively). These decreases partially offset the increases among the younger children in these areas such that youth in large metropolitan counties overall experienced a relatively small increase in rates of 7.86%. Turning to Figure 2.10, which displays the change in substance use-associated foster care entry rates between 2010 and 2018 by level of urbanization and race/ethnicity, American Indian/Alaska Native children had the largest increases in rates across all levels of urbanization. Their increase was greatest in rural counties at 225.91% and smallest at 39.73% in large metropolitan counties. After American Indian/Alaska Native children in rural and non-metropolitan counties, non-Hispanic white children in rural and non-metropolitan urban areas had the largest increase in rates at 120.43% and 117.67%, respectively. The only groups to experience rate decreases were non-Hispanic Black and Asian/Pacific Islander youth in large metropolitan counties.

Figure 2.9. Percent Change in Rates of Substance Use-Associated Foster Care Entry 2010-2018, by Age Group and County Level of Urbanization

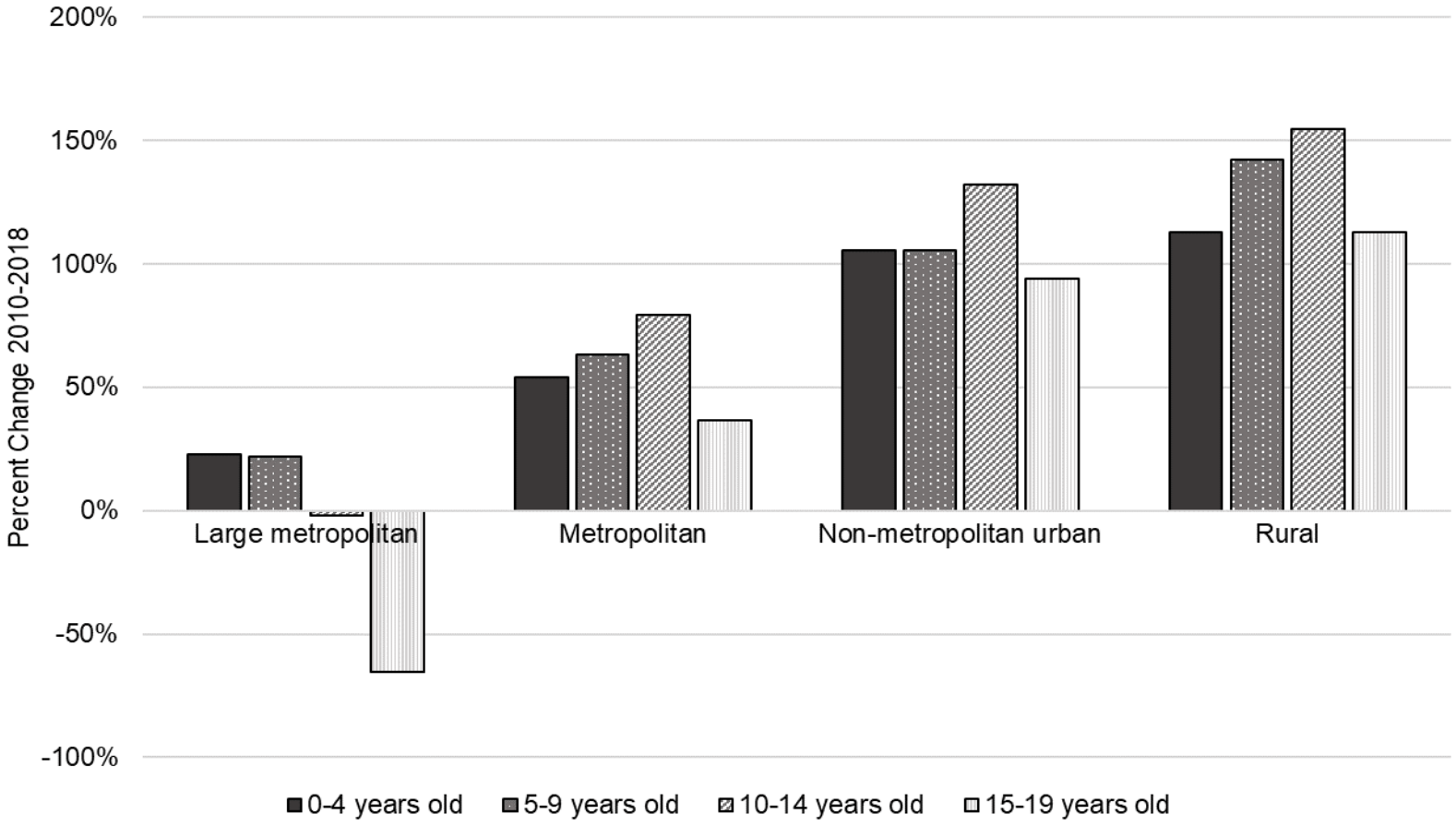
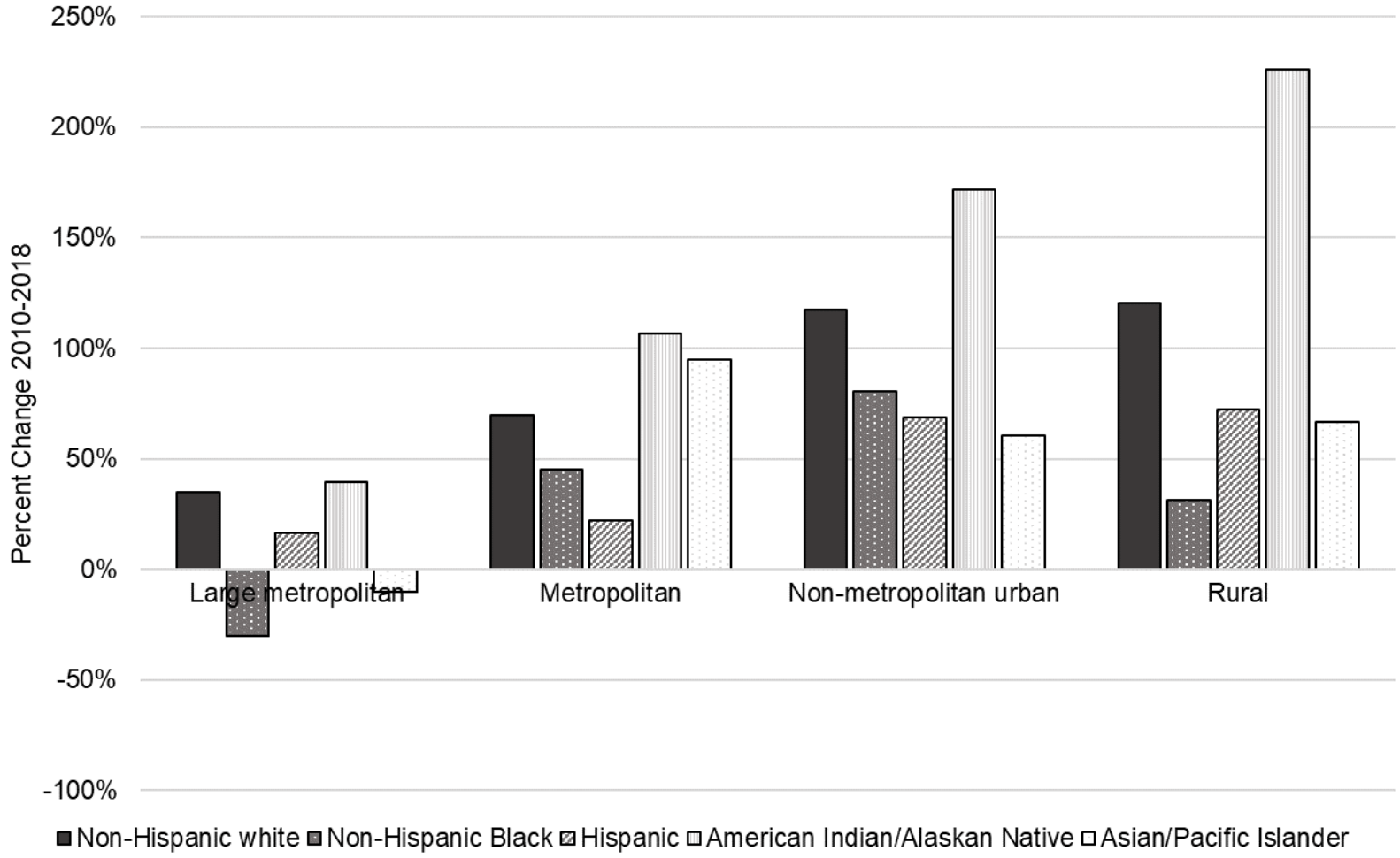
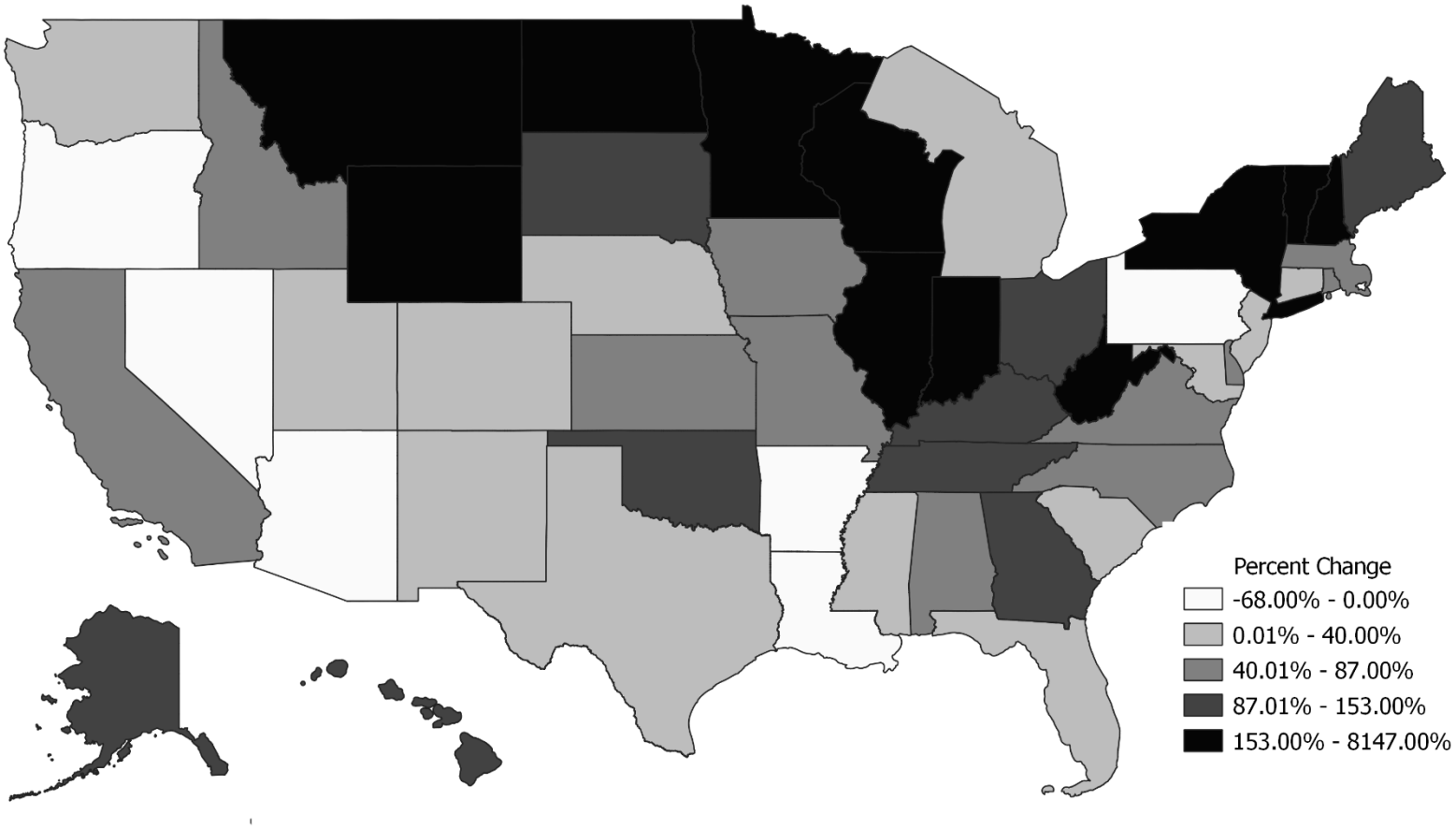


Figure 2.10. Percent Change in Rates of Substance Use-Associated Foster Care Entry 2010-2018, by Race/Ethnicity and County Level of Urbanization



Finally, Figure 2.11 displays the percent change in rates of substance use-associated foster care entry by state between 2010 and 2018. The shades in the map represent quintiles. Rates were generally highest in parts of the Mountain West, the upper Midwest, Appalachia, and parts of New England. Rates tended to be lower in the Southwest and Great Plains. The states with the largest increases were Illinois (8146.8%), Wyoming (1258.9%), New Hampshire (850.6%), Montana (525.5%), and Vermont (473.0%). Most states experienced increases; the only states to have a decrease in rates were Arkansas (-3.6%), Arizona (-31.4%), Oregon (-38.7%), Nevada (-50.2%), Pennsylvania (-58.5%), Louisiana (-63.5%), and the District of Columbia (-67.9%).

Figure 2.11. Percent Change in Rates of Substance Use-Associated Foster Care Entry 2010-2018, by State



Note: Ranges represent quintiles. Map generated in QGIS 3.

DISCUSSION

This study used administrative data from the Adoption and Foster Care Analysis and Reporting System to estimate trends in substance use-associated foster care entry rates and proportion of foster care entries attributable to parental substance use between 2001 and 2018 by race/ethnicity, age, level of urbanization, and state. Non-Hispanic white and American Indian/Alaska Native children experienced the greatest growth in terms of both rates and proportion of cases attributable to parental use, consistent with my hypothesis. Black and Asian/Pacific Islander children experienced a decline in rates, but not in the proportion of foster care entries attributable to parental drug use. These estimates differ slightly from those calculated by Meinhofer and colleagues' (2020), likely due to differences in the source of population estimates and sample restrictions, but the conclusions regarding differences by race/ethnicity are substantively the same. All age groups experienced an increase in substance use-associated foster care entry rates, with infants experiencing the greatest growth in rates, as hypothesized. All races experienced increases in these rates among infants; the greatest increases were among white and American Indian/Alaska Native infants, partially supporting my hypothesis that white infants would have the largest growth in substance use-associated foster care entry rates compared to infants of other races. Contrary to overall national trends, substance use-associated foster care entry rates declined among Black youth older than six years old and Asian/Pacific Islander youth older than two years old. This finding partially supported my hypothesis that among older age groups, Black children would have the lowest growth in foster care entry rates. Rates of substance use-associated foster care entry increased across all levels of urbanization, but, as hypothesized, rural areas had the fastest growth at 128.24% compared to only 7.86% in large metropolitan regions.

Furthermore, as hypothesized, growth in rates for infants and adolescents were the highest in rural areas. In contrast to my hypothesis, Black and Hispanic youth in rural areas did not have greater growth than white children in rural areas, although Native American/Alaska Native children did. Large metropolitan areas were the only regions to see decreases in rates, specifically preteens, teenagers, Black youth, and Asian/Pacific Islander youth. In terms of state variation, growth in substance use-associated foster care entry rates was highest in states in the northern parts of the West, Upper Midwest, Appalachia, and parts of New England, whereas growth was the lowest in parts of the South and Southwest.

These trends partly reflect a demographic shift in who uses certain types of drugs (e.g., greater usage of opioids by rural white adults). Results of this study, along with others, show that American Indian/Alaska Native communities are at particularly high risk of intervention by the child welfare system due to parental substance use. The estimates presented here are an undercount of foster care entry among this group, because the AFCARS does not include data on foster care placements overseen by tribal agencies. In particular, the steep increase in rates among rural American Indian/Alaska Native children may reflect the high rates of poverty, lack of employment opportunities, and social isolation on reservations (Whitney Mauer, 2017), which can contribute both to higher substance use and child maltreatment. These results should be understood within the context of historical trauma, including a long history of discriminatory child welfare policies that explicitly sought to break up Native families (Crofoot & Harris, 2012). High rates of substance use among these communities reflect a response to traumatic life stressors, as well as barriers to (e.g., lack of transportation) and deliberate avoidance of (e.g., out of fear of discrimination) substance use treatment (Walters, Simoni, & Evans-Campbell, 2002).

Along with American Indian/Alaska Native children, white children had the largest growth in substance use-associated foster care entry rates. This finding reflects the disproportionate impact of opioid addiction and other forms of substance use-related morbidity among whites, especially those in rural areas (Case & Deaton, 2015). The relatively lower rates of substance use-associated foster care entry among Black children may be in part a reflection of discriminatory prescribing practices that denied Black patients access to opioids for pain relief (Anderson, Green, & Payne, 2009).

Asian-Americans, Native Hawaiians, and Pacific Islanders had the lowest rates and growth in substance use-associated foster care entry. This finding is consistent with other research demonstrating that these groups are under-represented in the child welfare system (Meinhofer et al., 2020). Relatively little research explores causes of this disparity, with some researchers pointing to differences in cultural norms that are protective for Asian youth (Zhai & Gao, 2009). Asian-Americans, but not native Hawaiians and Pacific Islanders, also have lower rates of substance use compared to whites (Wu et al., 2013; Schuler, Schell, & Wong, 2021).

However, recent increases in opioid usage and overdose deaths among Black adults, particularly those in metropolitan areas (Lippold et al., 2019), run contrary to the decrease in substance use-associated foster care entry among Black youth and urban adolescents. These declines are particularly striking given that these youth have historically been overrepresented in the child welfare system. Furthermore, increases in opioid-associated mortality are larger among Black adults over the age of 34 compared to younger Black adults (Allen et al., 2019), suggesting that substance use-associated foster care entry should be higher for older compared to younger Black youth; these findings show an opposite pattern. Recent growth in opioid overdose rates for Black adults has been largest in large metropolitan areas (Althoff et al., 2020), which also runs counter to

these results, which show the largest decreases in substance use-associated foster care entry rates among urban Black youth. Thus, these results are likely not just the product of demographic shifts in substance use, but also reflect changes within the child welfare system that result in greater detection of substance use among certain populations (e.g., a new focus on substance-exposed infants, particularly among white families).

Although this data does not specifically measure caseworker decision-making, the other findings regarding age and urbanization can support some preliminary hypotheses about why substance use-associated foster care entry rates are declining for Black youth. The decline among Black adolescents is particularly large. The adultification of Black youth (Dumas & Nelson, 2016; Epstein, Blake, & González, 2017) may mean that caseworkers are less likely to remove Black youth from the home compared to other races in the context of substance-using parents due to the implicit belief that Black youth are mature enough to remain safe in this scenario. Older adolescents tend to enter the foster care system due to their own behavioral problems, rather than maltreatment by parents, which suggests older Black youth are instead being diverted into juvenile justice systems instead of the foster care system. This hypothesis, although speculative, is also supported by the fact that across the urban-rural continuum, declines in rates among 15-17 year olds are greatest in large metropolitan areas and Black youth in urban areas in particular are at high risk of incarceration (Hinton, 2015). Another related possibility is that these low rates reflect a selection effect in which older Black youth from households with parental substance issues are more likely to have already been incarcerated prior to contact with the child welfare system compared to older youth of other races. In addition, other researchers have found low rates of unmet need for substance use treatment among Black compared to white individuals, which may be due to greater rates of court-mandated substance abuse treatment among Black individuals (Mulvaney-Day et al.,

2012). If Black parents are already undergoing substance abuse treatment under the supervision of the criminal justice system, they may be less likely to have their children removed due specifically to substance use. Lastly, a final possibility is that Black parents may rely more on grandparents and other relatives to step in as primary caregivers when one or both parents struggle with addiction (Brown et al., 2002), thus avoiding the need for intervention by the child welfare system.

Limitations

Limitations of this study include the measurement and reporting of substance use as a factor involved with foster care entry. The AFCARS does not distinguish between different types of drugs, thus it is impossible to assess precisely the extent to which these trends reflect opioid-related morbidity and mortality. Furthermore, the identification and reporting of parental substance use as a factor involved with foster care entry is not standardized across states or even agencies. State-level variation in trends may be due in part to changes in reporting standards rather than changes in the actual prevalence of parental substance use as a reason for a child's removal (Seay, 2015). For example, Illinois does not report any substance use-associated foster care entries until 2010, despite having relatively high rates of opioid-related mortality (Rigg, Monnat, & Chavez, 2018). Nonetheless, even if these estimates do not precisely reflect substance abuse patterns among parents, they do reflect changes in how caseworkers and policymakers understand and identify parental substance use as a form of child maltreatment. Given that this data only includes children who entered foster care, it cannot be used to assess individual-level differences between children who did and did not enter foster care following an investigation of child maltreatment. Future research should link administrative data on child maltreatment reports, foster care entry, and contact with the juvenile justice system

to more definitively test the hypothesis that older Black youth in homes with parental substance use are more likely to be diverted into the juvenile justice system rather than foster care.

A further limitation of this study is the measurement of race/ethnicity. Although the AFCARS requirements stipulates that a child's race/ethnicity should be determined "based on how a client perceives him/herself or in the case of young children, how the parent identifies the child" (National Data Archive on Child Abuse and Neglect, 2019), there has been no systematic evaluation of how agencies actually record this data. A child's identification of their own race/ethnicity may differ from the agency's categorization and, in one study, agencies were more likely to categorize youth as white compared to the youth themselves (Schmidt et al., 2015). The AFCARS does not contain data on parental nativity, thus it is impossible to identify how trends may differ by immigration status. Hispanic children with immigrant parents may have lower rates of substance use-associated foster care entry compared to Hispanic children with U.S.-born parents, for example, if the former group comes into less contact with mandatory reporters out of fear of deportation (Davidson et al., 2019). Lastly, the AFCARS does not contain information on the education, income level, or employment status of the child's parents, thus preventing the analysis of differences in these trends by parental social class.

Conclusion

This study updates previous work on racial/ethnic disparities in substance use-associated foster care entry and offers the first comprehensive estimates of these rates by age, level of urbanization, and by pairwise combinations of age, race/ethnicity, and urbanization. White children, American Indian/Alaska Native children, infants, and youth

in rural areas had the greatest increases in substance use-associated foster care entry rates. The only groups to experience declines in these rates were adolescents in large metropolitan counties, Black youth ages six and older, and Asian/Pacific Islander youth ages two and older. These results indicate changing forms of disproportionality in the foster care system and provide evidence not only of a demographic shift in parental drug use, but also a shift in parental substance use identification practices, i.e. which substance-using parents caseworkers perceive to be putting their children at risk of harm and how these parents are identified. He and colleagues (2020) caution that a single-minded focus on opioids among policymakers and practitioners could shift attention away from Black parents struggling with addiction to other type of drugs like methamphetamine. Given that the child welfare system often acts as a source of needed services for families, these results are troubling if they reflect a lack of support and/or intervention for Black families in need of help. Researchers have also recently called attention to the contrast between the media's framing of the crack cocaine epidemic of the 1980s and today's opioid epidemic; the former being framed as a criminal justice issue whose victims deserved punishment and the latter as a public health issue whose victims needed medical treatment (Shachar, Wise, Katznelson, & Campbell, 2020). With this critique in mind, this article seeks to avoid a "white-washed narrative" of opioid addiction (Fine, Herzberg, & Wakeman, 2021) and call attention to the disparate involvement of Native American/Alaska Native families in the child welfare system as well as to the possibility that the child welfare system may be underserving Black communities. Regardless of the specific substance type, substance use should be approached as a public health, rather than criminal, issue and all individuals, including parents, should have access to affordable, high-quality, evidence-based substance abuse treatment.

Chapter 3. Study II: Exploring the Geographic Variation in the Growth of Substance Use-Associated Foster Care Entry Rates

INTRODUCTION

Substance use exposure during infancy and childhood is an area of growing concern for policymakers, health care providers, and child welfare practitioners, particularly in the context of the opioid epidemic. The Comprehensive Addiction and Recovery Act (CARA) of 2016 amended the Child Abuse Prevention and Treatment Act of 1974, the key federal legislation on child welfare, to address the effects of substance use disorders on infants, children, and families. Caregiver drug abuse was identified as a risk factor in 29.4% of substantiated child maltreatment reports in 2019 (U.S. Department of Health & Human Services, 2021), up from 18.0% in 2010 (U.S. Department of Health & Human Services, 2011). Furthermore, between 2000 and 2017, the number of foster care entries associated with parental drug use increased by 147% from 39,130 to 96,672 removals, even while entries attributable to other reasons declined (Meinhofer & Angleró-Díaz, 2019).

This overall increase, however, masks considerable variability in these trends across states and counties. The most straightforward explanation for geographic disparities is different rates of substance use; e.g., regions of the country hit harder by the opioid epidemic may also have higher rates of substance use-associated foster care entry due to greater rates of opioid-related mortality and morbidity among parents (Ghertner, Waters, Radel, & Crouse, 2018). However, the processes by which substance-using parents come into contact with the child welfare system, caseworkers define their substance use as child maltreatment, and child welfare authorities decide to remove a child also differ by place. For example, state policies differ in their definition of child maltreatment: twenty-three states and the District of Columbia consider prenatal

substance exposure to be a form of child abuse or neglect. Thirteen states further define substance use that impairs the caregiver's caretaking ability as a form of maltreatment, regardless of a child's age (Child Welfare Information Gateway, 2020a). In addition, some populations may be more visible to the child welfare system and may be more likely to have their children removed compared to other groups even with similar substance use behaviors. The goal of this study is to use latent growth curve modeling to examine the extent to which not only substance use indicators, but also state health policies, child welfare policies, and sociodemographic characteristics explain county-level variation in the growth of substance use-associated foster care entry rates.

Variability by County Health Characteristics

Given that the effects of the opioid epidemic have not been felt equally across the country (Rudd et al., 2016), researchers have shown a strong link between substance use and child welfare indicators at the county and state levels (Quast, 2018; Quast, Storch, & Yampolskaya, 2018; Ghertner et al., 2018; Quast, Bright, & Delcher, 2019). Because physicians' prescriptions have been a major source of opioids (including illegally diverted opioids) (Madras, 2017), adults living in counties with greater opioid dispensation rates may be at greater risk of substance use disorders and opioid-related mortality.

Beyond the supply of opioids, another geographically varying factor that has been less explored in the literature on the opioid epidemic and the foster care system is substance use treatment. Availability of substance use treatment may decrease rates of substance use-associated foster care entry first because more parents may be able to address their substance use prior to coming into contact with the child welfare system and second because, once in contact with the child welfare system, parents who are actively

pursuing treatment may be less likely to lose custody of their children (Gilchrist & Taylor, 2009). The availability of substance abuse treatment was improved in states which expanded Medicaid. Medicaid expansion refers to the provision of the Affordable Care Act of 2010 that increased eligibility for Medicaid for adults with incomes up to 138% of the federal poverty level, which a 2012 Supreme Court ruling made optional for states and thus has not been universally adopted. One form of effective substance use treatment that could be more available with Medicaid expansion is medication-assisted treatment (MAT), which involves using medications to decrease cravings, reduce withdrawal symptoms, and block the effects of opioids or alcohol. Medicaid generally covers these types of treatments, although coverage of specific drug types and eligibility differ by state. Meinhofer and Witman (2018) showed that Medicaid expansion was associated with greater utilization of outpatient MATs for opioid use disorders. Furthermore, this increase was greatest in states with greater coverage of MATs.

Thus, I hypothesize that the county opioid dispensation rate will be positively associated with both the baseline substance use-associated foster care entry rate and growth over time. Counties in states with an expanded Medicaid program, greater Medicaid generosity, greater coverage of medication-assisted treatments and with higher insurance rates among low-income adults will have less growth in substance use-associated foster care entry rates.

Variability by County Sociodemographic Characteristics

County sociodemographic variables may explain variation in substance use-associated foster care entry rates because these conditions are the fundamental causes (Link & Phelan, 1995) of both child maltreatment (Wood et al., 2012) and substance use (Carpenter, McClellan, & Rees, 2017). Poverty is a well-known correlate of child abuse

and neglect both at the individual and community level (Coulton et al., 2007), as it is associated with a host of other risk factors for child maltreatment, including substance use. Insofar as unemployment lowers family income, greater unemployment rates may also predict greater foster care entry (Freisthler, Merrit, & LaScala, 2006). In addition, job loss can provoke feelings of stress, depression, and hostility that manifests as substance abuse and child maltreatment (Catalano et al, 1999). Income inequality also predicts higher child maltreatment rates at the county level (Eckenrode et al., 2014). The stress and lack of social cohesion associated with income inequality also contributes to higher rates of drug and alcohol abuse in more unequal environments (Wilkinson & Pickett, 2009). As greater education may decrease substance use rates through greater economic stability and more social connections (Miech et al., 2011), counties with a less-educated population may also have higher rates of substance use-associated foster care entry.

The political climate of an area might influence its substance use-associated foster care entry rates, as rates of foster care placement and child maltreatment increase when social safety nets contract (Paxson & Waldfogel, 2003; Halpern-Meekin, 2015; Berger et al., 2017; Kovski et al., 2021). State-level economic policy, such as the generosity of the Earned Income Tax Credit, can influence child well-being directly through providing resources to families and indirectly by reducing chronic stress that can lead to substance use and harsh parenting. Counties in Republican states, which tend to have less robust social safety nets, thus may experience more growth in substance use-associated foster care entry rates.

Female incarceration rates may also be positively associated with substance use-associated foster care entry rates: growing female incarceration rates explained 31% of the increase in overall foster care caseloads between 1985 and 2000 (Swann & Sylvester,

2006). The removal of a child's primary caregiver from the household can directly lead to foster care entry and, once released from prison, many women will struggle to regain custody of their child with a criminal record. Female incarceration may be linked with substance use-associated foster care entry in particular because the rise in female incarceration was in large part due to the War on Drug's punitive policies, like mandatory minimum sentencing for drug offenses (Chesney-Lind, 1995).

County sociodemographic variables may also be associated with substance use-associated foster care entry rates not only because they directly affect rates of substance use, but also because the link between substance use and foster care entry may vary by sociodemographic status. In other words, whether a parent who uses substances comes into contact with the child welfare system in the first place and, once in contact, has a child removed, depends on who that parent is and where they live. For example, low-income families are more visible to mandatory reporters as they interact more with public agencies than middle to upper-class families (Fong, 2017). Similarly, child protective services tend to have a greater presence in impoverished neighborhoods, where residents may use child maltreatment reporting as a means of retaliation (Roberts, 2008). In areas with high income inequality, caseworkers from more middle-class backgrounds may be especially likely to interpret poverty as a form of child maltreatment (Miller et al., 2013). Put another way, in areas where the relationships between caseworkers and parents are likely to be especially adversarial, caseworkers may use parental substance use as evidence of maltreatment even if the use does not interfere with a parent's caretaking ability. Alternatively, if individuals do not meet the sociodemographic profile of someone a caseworker or healthcare professional expects to use substances, then they may never be screened for substance use or otherwise come into contact with the child welfare system in the first place. For example, highly educated, affluent White women who visit

a private doctor's office are less likely to be screened for drugs during pregnancy than a poor, Black mother in a public clinic. Furthermore, children who may have been able to stay at home in places where families could receive substance use treatment and other social services may instead be removed in areas where these services are lacking (Font & Maguire-Jack, 2015). Thus, parental substance use is not the only factor in the child welfare decision-making process; how a caseworker perceives that substance use (which may be influenced by racial and class biases), as well as the availability of services in the area, also influences the decision-making process.

For the above reasons, I hypothesize that counties in Republican states, that have greater rates of poverty, unemployment, female incarceration, inequality, lower educational attainment, and higher income inequality will have greater baseline rates of substance use-associated foster care entry and larger growth in these rates over time.

Variability by Policy Characteristics

Whether a family comes into contact with the child welfare system due to parental substance use and whether the child is subsequently removed from the home are shaped by a series of decision-making processes by child welfare workers and other professionals, which are in turn shaped by a larger policy context. Between 2000 and 2017, 24.4% of foster care entries due to parental substance use were among infants less than one year old, compared to 13.4% of foster care entries for all other reasons (Meinhofer & Angleró-Díaz, 2019), thus variability in states' approaches to substance use during pregnancy may explain some of the geographic variability in these rates. States differ in their level of surveillance of prenatal drug use, as well as the criminal and civil ramifications of substance use during pregnancy, which is typically established through toxicology screenings of the mother and newborn. In twenty-three states and the

District of Columbia, substance use during pregnancy is considered child abuse (Child Welfare Information Gateway, 2020a). Sanmartin and colleagues (2020) found that substance use-associated foster care entries were higher and children were less likely to reunify with their parents in these states. Women in these states may be less likely to access substance use treatment out of fear of involvement with child protective services (Roberts & Pies, 2011); indeed, states that consider drug use during pregnancy to be a criminal offense and/or child abuse had fewer substance use disorder treatment admissions among pregnant women (Kozhimannil et al., 2019) and higher rates of neonatal abstinence syndrome (Faherty et al., 2019).

In addition to fears about child welfare system involvement, pregnant women also cite a lack of availability of programs as another barrier to substance use treatment (Stone, 2015; Frazer, McConnell, & Jansson, 2019). State policies aimed at identifying and facilitating treatment for substance use disorders among pregnant women include policies related to testing, reporting, and treatment programs. As of 2021, twenty-five states and the District of Columbia require healthcare workers to report suspected prenatal drug use and eight states require testing if healthcare workers suspect drug use (Guttmacher Institute, 2021). On the one hand, testing and reporting requirements may facilitate entry into substance use treatment (Kozhimannil et al., 2019), thus lowering the rate of substance use-associated foster care entry if child welfare caseworkers are able to connect mothers to appropriate programs in a timely manner. On the other hand, these requirements may increase the rate of substance use-associated foster care entry by identifying substance use or other forms of child maltreatment that may have otherwise gone undetected by the child welfare system.

Other policies focus specifically on pregnant women's access to substance use treatment programs. Nineteen states have created or funded substance use treatment

programs targeted to pregnant women; seventeen states and the District of Columbia give priority access to pregnant women in state-funded substance use treatment programs. Ten states explicitly prohibit state-funded substance use treatment programs from discriminating against pregnant women (Guttmacher Institute, 2021). By improving access to treatment, these policies could decrease the rate of foster care entry due to parental substance use, but it is unclear the extent to which participation in substance use treatment programs would increase the chances of child welfare system involvement for pregnant women with no previous involvement.

I hypothesize that counties in states with reporting and testing requirements will have higher rates of substance use-associated foster care entry at baseline and over time. In addition, counties in states with policies that expand access to substance use treatment among pregnant women will have lower growth in these rates over time.

The Current Study

This study examines the correlates of county-level substance use-associated foster care entry rates and their change over time. Unlike previous studies that use cross-sectional data or longitudinal fixed-effects models, this study uses latent growth curve models to describe how sociodemographic, health, and policy characteristics shape the different rates of growth in substance use-associated foster care entry rates between counties. Growth curve models represent a parsimonious way to describe how predictors are associated not only with rates at a single point but also the level of change in these rates over time. Previous studies on the link between the opioid crisis and child welfare focus on county-level predictors of foster care entries in general (Ghertner et al., 2018), within-county variation over time (Quast, 2018), and between-state variation (Sanmartin et al., 2020). To build upon this work, this study examines sources of variation in the

trajectories of substance use-associated foster care entry rates between counties from 2005 to 2018.

DATA, MEASURES, AND METHODS

Data

This study uses data from the 2005-2018 annual Foster Care Files from the Adoption and Foster Care Analysis and Reporting System (AFCARS). The AFCARS system is a federally mandated data collection effort designed to track the characteristics of the foster care population and assess programs and policies related to the foster care system (Children's Bureau, 2019). States must collect data on all children in foster or adoptive care and submit this data twice yearly to the Children's Bureau for processing. The Children's Bureau then cleans and compiles this data into a single foster care file per year with one record per child. States must report data on all children for whom a state child welfare agency has responsibility for their placement, care, or supervision, including any children who have been removed from their home for more than 24 hours. Children who live outside of their parents' home without formal involvement of a public child welfare agency are not included in this data.

Population data for calculating foster care entry rates came from the 2005-2009 intercensal estimates and the 2010-2018 postcensal estimates available from the U.S. Census Bureau (National Center for Health Statistics, 2012; 2020). County-level demographic data came from the 2005-2018 American Community Surveys (ACS) one-year estimates (U.S. Census Bureau, 2019). In addition, county-level data on opioid dispensation rates came from the Centers for Disease Control and Prevention (2020) and data on female incarceration rates came from the Bureau of Justice Statistics (2019). Data on state Medicaid scores came from report published by the Public Citizen Health

Research Group (Arellano & Wolfe, 2007) and Medicaid medication coverage came from a report by the Substance Abuse and Mental Health Services Administration (2018). Lastly, data on state policies related to substance use during pregnancy were from the Guttmacher Institute (2021) and designation of a medically underserved area came from a database maintained by the Health Resources and Services Administration (2020).

The unit of analysis for this study was the county. Each data source included a Federal Information Processing Standard (FIPS) county or state code which allowed for linkage. Due to confidentiality protections, the AFCARS Foster Care Files do not include county FIPS codes for cases in counties with fewer than 1,000 children in foster or adoptive care. Between 2005 and 2018, 51.02% of cases in the AFCARS Foster Care Files did not include a county FIPS code. The remaining sample was made up of cases in 177 counties. Two counties were excluded from the analysis due to missing data issues: San Juan Municipio, Puerto Rico did not have data on female incarceration, opioid dispensation, or any of the Medicaid or policy variables, and Beltrami, Minnesota had too small of a population (fewer than 65,000 residents) to have publicly available ACS data. The final sample size was 175 counties in 43 states.

Measures

Substance use-associated foster care entry rates

Rates of foster care entry due to parental substance use were calculated using case-level data from the AFCARS as the numerator and the population of children ages 0 to 17 from ACS estimates as the denominator. For each year, I limited the AFCARS sample to cases who had entered foster care during the past year. I additionally dropped the 0.3% of cases who were older than 17 years old at their most recent removal from their parents' home. Fifteen dichotomous variables indicated reasons for a child's

removal from the parents' home; a child could have multiple reasons associated with their removal. A case was considered to be substance use-associated if one of the reasons was parental drug abuse, or if one of the reasons was child drug abuse and the child was younger than one year old (indicating prenatal drug exposure). Numbers of substance use-associated cases were then aggregated to the county level and calculated as rates per 1,000 children.

County sociodemographic characteristics

Voted for Bush in 2000 was a dichotomous variable indicating whether the county was located in a state that voted for George W. Bush in the 2000 presidential election and was included as a rough proxy for the county's political climate and social safety net generosity. The *female incarceration rate* measured the number of female prisoners under the jurisdiction of state or federal correctional authorities per 10,000 women. All other sociodemographic characteristics at the county level came from the American Community Surveys. The *Gini index* was a measure of household income inequality and ranged from 0 to 100, with 0 representing perfect equality (i.e., all households have exactly the same income) and 100 representing total inequality (i.e., one household has all of the income). The *poverty rate* indicated the percent of the population living in a household below 150% of the federal poverty line for that year and household size. The *unemployment rate* was the percentage of adults ages 16 and up who were currently in the labor force (i.e., available and looking for work) and unemployed. Lastly, the *percent of adults with a bachelor's degree* was the percent of adults 25 years and older with a four year college degree.

County health characteristics

Medically underserved area (MUA) was a dichotomous variable representing whether or not a county was designated by the Health Resources and Services Administration as an area with a shortage of primary care health services. Medically underserved areas can be designated for areas as small as a group of census tracts; if a county contained any MUAs, then the entire county was coded as an MUA. The *percent of medication-assisted treatments (MATs) covered by Medicaid* refers to the percent of the ten types of medication approved for drug or alcohol use disorder (e.g., naloxone, methadone, bupropion) that a state's Medicaid program will cover. *Expanded Medicaid by 2014* was a dichotomous variable indicating whether or not a county was in a state that expanded eligibility for Medicaid to adults up to age 64 with incomes up to 138% of the federal poverty level following the Patient Protection and Affordable Care Act of 2010. *Medicaid score* was a continuous variable that rated a state's Medicaid program on four factors: eligibility, scope of services, quality of care, and reimbursement. Scores ranged from 0 to 100, with higher scores indicating more generous programs. The *percent of poor adults with health insurance* came from the American Community Surveys and measured the percent insured among adults with incomes up to 138% of the federal poverty line (i.e., the cut-off for eligibility for expanded Medicaid programs). Finally, the *opioid dispensation rate* measured the number of opioid prescriptions (as identified using National Drug Codes) dispensed per 10 people.

State policies on substance use during pregnancy

Five dichotomous variables measured the state policy context of each county regarding maternal substance use during pregnancy. Two of these variables related to health care workers' response to prenatal substance use: whether or not they are *required to test if substance use is suspected* and whether or not they are *required to report*

prenatal substance use to child welfare agencies. Three other variables related to drug treatment availability for pregnant women: whether or not a state had created *targeted substance use treatment programs for pregnant women*, whether or not *pregnant women were given priority access* to state-funded drug treatment programs, and whether or not state-funded programs are *prohibited from discriminating against pregnant women*. An additional variable, whether or not a state considered substance use during pregnancy to be child abuse, was not included in final models because it was highly collinear with the other five policy variables.

Methods

The first step of the analyses was to model the mean substance use-associated foster care entry rates between 2009 and 2018 using Joinpoint software (National Cancer Institute, 2020). The purpose of this step was to provide a descriptive summary of trends in these rates and assess the best functional form of the growth curves modeled in subsequent analyses. Joinpoint uses trend data (in this case, mean substance use-associated foster care entry rates per year) and fits a model made up of linear segments joined together with joinpoints. A joinpoint is a point (i.e., a year) in which a significant change in the trend occurs; for example, a joinpoint might reflect the year in which rates stop decreasing and begin increasing (Kim, et al. 2000). The Joinpoint software estimates a series of models with an increasing number of such joinpoints and selects the model in which adding further joinpoints would not significantly improve model fit. In addition to finding joinpoints, this software also provides the annual percent change for each segment and whether or not this change is statistically different than zero.

The next step of the analyses was to model latent growth curves of counties' substance use-associated foster care entry rates between 2005 and 2018. Latent growth

curve modeling is a type of structural equation modeling commonly used in the developmental and behavioral sciences to model individual change in behaviors and characteristics over time. Instead of a characteristic of individuals, this study analyzes changes in a county-level characteristic. A basic latent growth curve typically estimates two latent variables that describes how an outcome variable (in this case, foster care entry rates) changes over time: the intercept and the slope. The intercept describes the average value of the outcome variable when time is equal to zero; the slope describes the average change in the outcome per time unit. However, counties will differ in both their baseline rates, as well as in their change in rates over time, as reflected in the variance terms for the intercept and slope, respectively. Covariates can be incorporated in these models to explain this variance and explore what predicts differences in the intercepts and slopes. Additional parameters, like quadratic and cubic terms, can be added if the outcome variable displays nonlinear growth (Duncan, Duncan, & Strycker, 2006).

Based on a combination of visual inspection of the data, Joinpoint results, fit indices, and ease of interpretation, I chose to model substance use-associated foster care entry rates using two linear growth curves, one modeling the change between 2005 and 2009 and the other modeling the 2009-2018 change. Both models were specified three different ways with an increasing number of covariates. Model 1 included county demographic characteristics, Model 2 added health-related county characteristics, and Model 3 added variables related to prenatal substance use policies. The variables in each model reflected the appropriate time period (i.e., variables measured in 2005 were used for the 2005-2009 models) and were nearly identical except for the percent of poor adults with insurance and Medicaid expansion, which were not available in 2005-2009. All continuous variables were grand mean-centered. The errors of adjacent foster care entry rate measurements were correlated (e.g., the residuals of the rate in 2006 were correlated

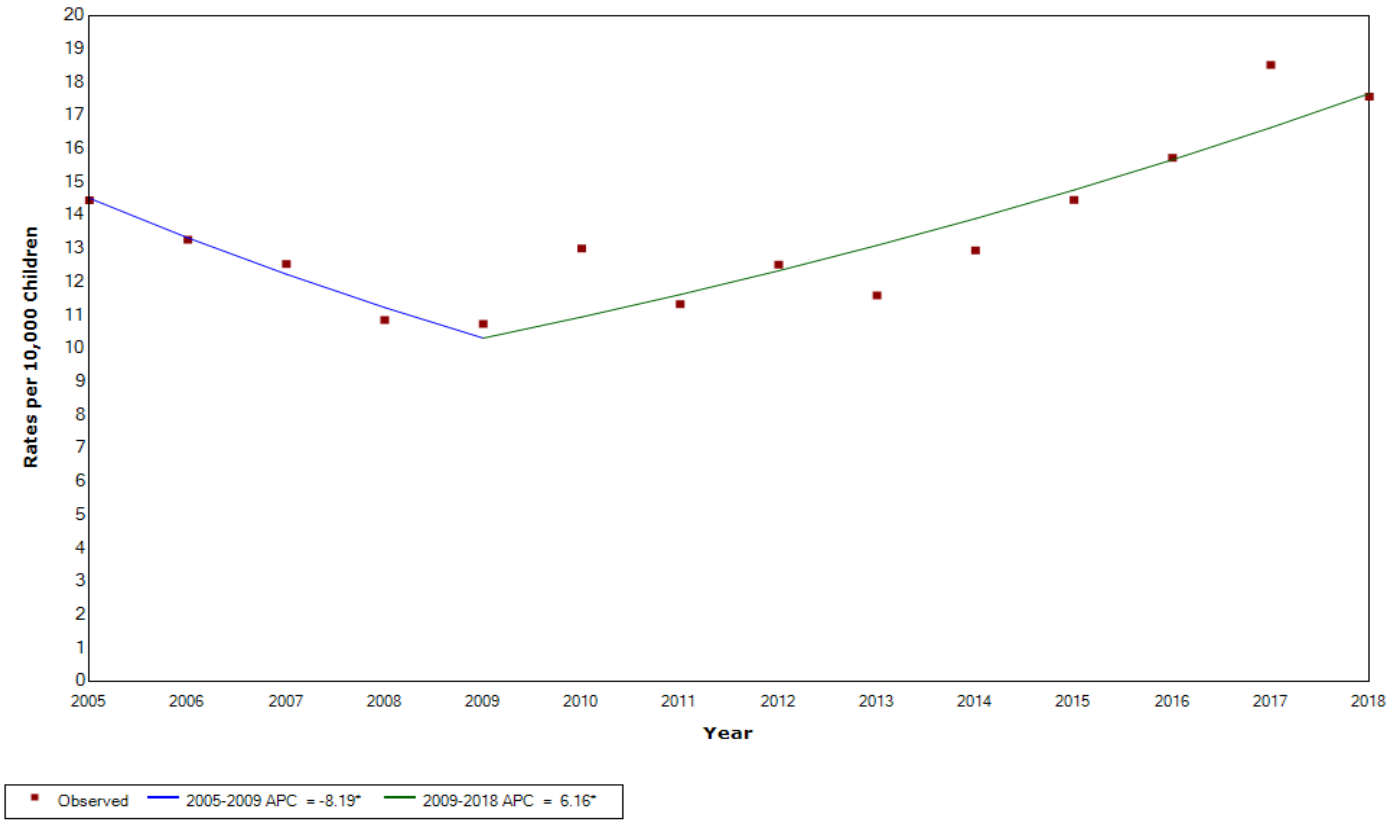
with the rates in 2005 and 2007). Because counties were nested within states, robust standard errors were specified to reduce type I error. Missing data was addressed using full-information maximum likelihood estimation, which produces unbiased and efficient estimates under ignorable missing data conditions (Enders & Bandalos, 2001). All latent growth curve model analyses were conducted in Mplus Version 8.4 (Muthén & Muthén, 1998-2017).

RESULTS

Trends in Substance Use-Associated Foster Care Entry Rates

The first step of analysis was to use Joinpoint to model trends in counties' rates of foster care entry associated with parental substance use. This step was done for two reasons: first, to summarize and describe these trends and second, to establish the best functional form for fitting growth curves to these data. Figure 3.1 plots the mean substance use-associated foster care entry rates for the 175 counties used in this analysis between 2009 and 2018. Substance use-associated foster care entry rates declined between 2005 and 2009 by approximately 8.19% per year, from 14.44 to 10.73 entries per 10,000 children. Between 2009 and 2018, these rates rose by approximately 6.16% per year, from 10.73 to 17.56 entries per 10,000 children. The best-fitting model had one joinpoint at 2009. Thus, I fit two growth curve models to this data: one to model the decline in rates between 2005 and 2009 and another to model the increase in rates between 2009 and 2018. Table 3.1 summarizes the county means and frequencies on all variables used in the subsequent latent growth curve models.

Figure 3.1. Joinpoint Model of Substance Use-Associated Foster Care Entry Rates, 2005-2018



Note: APC = annual percent change. * Indicates that the APC is significantly different from zero at the alpha < 0.05 level. Final selected model: 1 joinpoint.

Table 3.1. Descriptive Statistics of Counties ($N = 175$)

	Frequency (%) or Mean (SD)	Percent Missing
Substance use-associated foster care entry rate per 1,000 children		
2005	1.44 (1.49)	22.86%
2006	1.33 (1.21)	20.00%
2007	1.25 (1.07)	22.29%
2008	1.09 (1.03)	26.86%
2009	1.07 (1.07)	30.86%
2010	1.30 (1.88)	36.00%
2011	1.13 (1.26)	38.29%
2012	1.25 (1.22)	38.86%
2013	1.16 (1.07)	38.86%
2014	1.29 (1.32)	36.57%
2015	1.45 (1.53)	36.00%
2016	1.57 (1.47)	35.43%
2017	1.85 (1.81)	33.14%
2018	1.76 (1.53)	34.86%
Sociodemographic characteristics		
Voted for Bush in 2000	49.71%	0.00%
Female incarceration rate per 10,000 women 2005	5.78 (2.33)	0.57%
Female incarceration rate per 10,000 women 2009	5.87 (2.45)	0.57%
Gini index 2005	45.15 (3.20)	0.00%
Gini index 2009	45.60 (3.18)	0.00%
Percent of population below 150% FPL 2005	22.05 (6.42)	0.00%
Percent of population below 150% FPL 2009	23.77 (6.30)	0.00%
Percent of adults unemployed 2005	7.11 (1.73)	0.00%
Percent of adults unemployed 2009	10.30 (2.51)	0.00%
Percent of adults with bachelor's degree 2005	28.70 (8.39)	0.00%
Percent of adults with bachelor's degree 2009	29.24 (8.66)	0.00%
Health characteristics		
Medically underserved area	95.43%	0.00%
Percent of MATs covered by Medicaid	91.71 (9.91)	0.00%
Expanded Medicaid by 2014	58.29%	0.00%
Medicaid score 2007	4.72 (0.80)	1.71%

Table 3.1 continued on following page

Table 3.1. Descriptive Statistics of Counties (N = 175), continued

Percent of poor adults with insurance 2009	47.78 (8.77)	0.00%
Opioid dispensation rate per 10 persons 2006	7.76 (2.86)	0.00%
Opioid dispensation rate per 10 persons 2009	8.44 (3.04)	0.00%
Substance use during pregnancy laws		
Required to report substance use	46.95%	6.29%
Required to test if suspected	9.15%	6.29%
Targeted programs for pregnant women	62.80%	6.29%
Priority access to substance use treatment	28.05%	6.29%
Protection from discrimination	28.05%	6.29%

Note: FPL = federal poverty line; MAT = medication-assisted treatment.

Latent Growth Curve Models

Table 3.2 displays the results from the unconditional growth curve models of substance use-associated foster care entry rates from 2005-2009 and 2009-2018. For both 2005-2009 and 2009-2018, growth curve models were specified with an intercept and a linear slope. In addition, the slope parameter for substance use-associated foster care entry rate at 2018 was set free to vary to improve model fit and capture the small decline in rates between 2017 and 2018. In order to lower the scale of the variance and improve estimation, rates were divided by 10 (i.e., per 1,000 children). The mean of the intercept represents the mean rate when time equals zero (in this case, 2005 or 2009) and the mean of the slope represents the mean change in the rate per year. Thus, according to the unconditional growth models, the mean rate of substance use-associated foster care entry in 2005 was 1.44 entries per 1,000 children with a yearly decrease of 0.09 entries per 1,000 children. Starting in 2009, the mean rate of substance use-associated foster care entry was 1.20 entries per 1,000 children and rose by an average of 0.08 entries per 1,000 children. The fact that the variances of all slopes and intercepts were statistically significant suggests that there was variability among counties in their baseline rates at

2005 and 2009 as well as in how these rates change over time. The subsequent models add covariates to explore how various demographic, health, and policy characteristics contribute to this variability.

Table 3.2. Unconditional Growth Curve of Substance Use-Associated Foster Care Entry Rates

	2005-2009				2009-2018			
	Intercept		Slope		Intercept		Slope	
	β	SE	β	SE	β	SE	β	SE
Means	1.442***	0.115	-0.093***	0.026	1.196***	0.091	0.075*	0.012
Variance	1.741***	0.247	0.063***	0.012	1.229***	0.169	0.015***	0.004

Table 3.3 displays the results for the 2005-2009 models. Coefficients in columns labeled "Intercept" describe how each variable is associated with the baseline rate, i.e. the rate of substance use-associated foster care entry in 2005. Coefficients in the columns labeled "Slope" describe how each variable is associated with the change in rates between 2005 and 2009. In terms of sociodemographic characteristics, a county in a state who voted for Bush had on average 0.72 fewer substance use-associated foster care entries per 1,000 children in 2005, but experienced greater growth in cases between 2005 and 2009. A one-point increase in the Gini index (indicating greater household income inequality) was associated with 0.14 fewer entries per 1,000 children in 2005; a one percentage point increase in the percent of the population below 150% of the federal poverty line was associated with 0.07 more entries per 1,000 children in 2005. In terms of health characteristics, a one-point increase in percentage of medication-assisted treatments covered by Medicaid was associated with 2.3 fewer entries per 1,000 children in 2005; put differently, having one more drug covered by Medicaid (i.e., a 0.10 point increase) was associated with 0.2 fewer entries in 2005. A greater opioid dispensation rate was associated ($\beta = 0.127$; SE = 0.029; $p < 0.001$) with more substance-use associated foster care entries in 2005. None of these variables were associated with the

slope, i.e. the change between 2005 and 2009. Laws related to substance use during pregnancy operated in complex ways: counties in states with laws requiring testing if prenatal drug use is suspected and pregnant women's protection from discrimination in substance use programs had higher rates of substance use-associated foster care entry in 2005, but rates declined more between 2005 and 2009 than counties in states without these laws. Conversely, counties in states with laws requiring prenatal substance use to be reported to child welfare agencies, the creation of targeted substance use treatment programs for pregnant women, and pregnant women's priority access to federally-funded substance use programs had lower rates of substance use-associated foster care entry in 2005 but experienced less of a decline (and in some cases, an increase) in rates over time.

Table 3.3 Conditional Growth Curve of Substance Use-Associated Foster Care Entry Rates, 2005-2009 ($N = 175$)

	Intercept		Slope	
	β	SE	β	SE
Sociodemographic characteristics 2005				
Voted for Bush in 2000	-0.724*	0.336	0.198*	0.078
Female incarceration rate per 10,000 women	0.096	0.064	-0.040	0.020
Gini index	-0.140***	0.040	0.020	0.012
Percent of population below 150% FPL	0.065**	0.024	0.000	0.006
Unemployment rate	-0.009	0.088	0.003	0.023
Percent of adults with bachelor's degree	0.026	0.014	-0.002	0.004
Health characteristics				
Medically underserved area	0.288	0.253	-0.007	0.074
Percent of MATs covered by Medicaid	-2.311*	1.103	-0.283	0.326
Medicaid score 2007	-0.171	0.163	-0.009	0.049
Opioid dispensation rate per 10 persons 2006	0.127***	0.029	-0.001	0.007
Substance use during pregnancy laws				
Required to report substance use	-0.569*	0.233	0.168*	0.077
Required to test if suspected	1.308***	0.318	-0.285***	0.078
Targeted programs for pregnant women	-0.907***	0.246	0.150**	0.045
Priority access to substance use treatment	-1.483***	0.240	0.245**	0.092
Protection from discrimination	1.384***	0.231	-0.349**	0.106
Intercept	4.406***	1.032	-0.040	0.289
Residual variance	0.692***	0.156	0.005	0.020

Note: β = beta coefficient; SE = standard error; FPL = federal poverty line; MAT = medication-assisted treatment. * $p < 0.05$; ** $p < 0.01$; $p < 0.001$.

To aid in interpretation of the findings related to substance use during pregnancy laws, Figure 3.2 displays the predicted mean trends of substance use-associated foster care entry for the five most common combinations of these laws. Compared to counties in states with none of these laws, counties with required reporting only had a lower rate at 2005, but their rates declined less and converged to a similar rate as counties with no laws by 2009. Counties in states with required reporting and targeted substance use

programs for pregnant women started with the lowest rate in 2005 but experienced an increase, instead of a decrease, in rates by 2009. The modal county, with no laws except targeted substance use programs for pregnant women, had a lower rate in 2005 than counties with no laws but less of a decline. Counties with targeted programs and discrimination protection for pregnant women, but no required reporting, had the highest rate of foster care entries in 2005 but the steepest decline by 2009. These results suggest that, during this period, policies that support pregnant women's access to substance use treatment programs contributed to a decline in substance use-associated foster care entry rates, but that required reporting might offset some of these declines.

Figure 3.2. Predicted Growth Curves of Substance Use-Associated Foster Care Entry Rates, by Selected Prenatal Substance Use Laws, 2005-2009

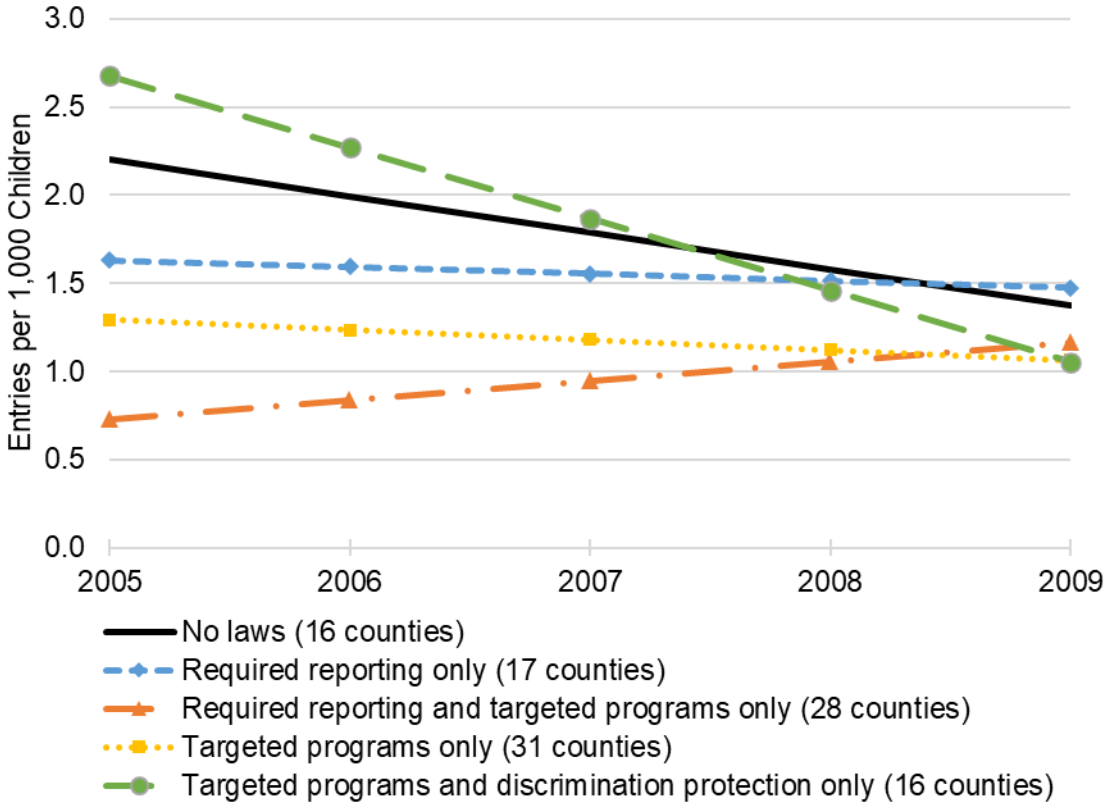


Table 3.4 displays the results for the 2009-2018 models, which can be read similarly as Table 3.3: coefficients in the columns labeled "Intercept" describe associations with the baseline rates in 2009 and coefficients in the columns labeled "Slope" describe associations with the change in rates between 2009 and 2018. A one point increase in the 2009 Gini index was associated with an average increase of 0.08 more substance use-associated foster care entries in 2009; a percentage point increase in unemployment and percent of adults with a bachelor's degree were associated with 0.10 and 0.03 fewer entries in 2009, respectively. No sociodemographic variables were associated with the latent growth curve slope, i.e. the rate of change between 2009 and

2018. In terms of health characteristics, the opioid dispensation rate was positively associated both with the intercept (β = 0.167; SE = 0.027, $p < 0.000$) and the slope (β = 0.016; SE = 0.006; $p < 0.05$).

Table 3.4. Conditional Growth Curve of Substance Use-Associated Foster Care Entry Rates, 2009-2018 ($N = 175$)

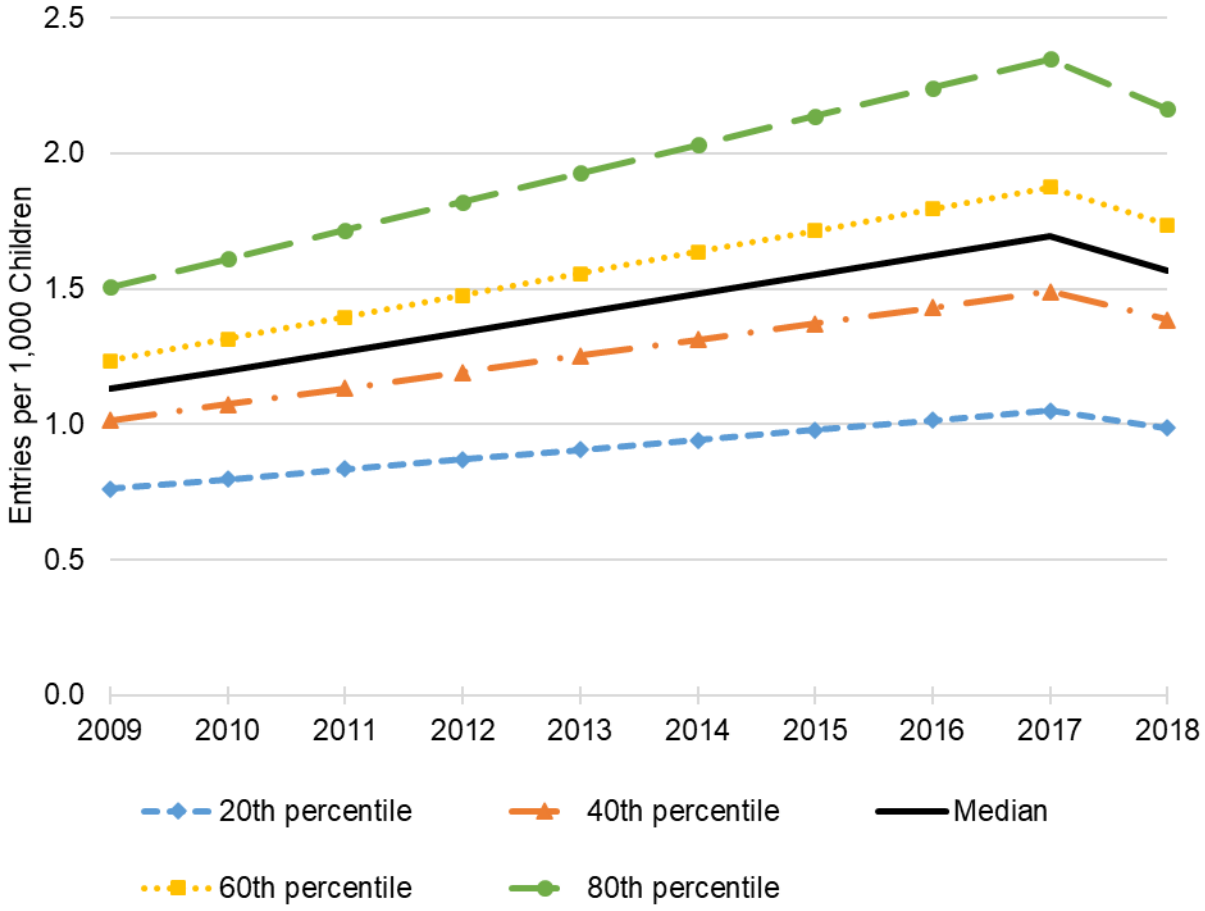
	Intercept		Slope	
	β	SE	β	SE
Sociodemographic characteristics				
Voted for Bush in 2000	0.161	0.347	-0.011	0.035
Female incarceration rate per 10,000 women 2009	0.058	0.074	-0.005	0.007
Gini index 2009	0.075*	0.036	-0.004	0.005
Percent of population below 150% FPL 2009	0.009	0.023	0.000	0.002
Unemployment rate 2009	-0.099**	0.033	-0.008	0.005
Percent of adults with bachelor's degree 2009	-0.031*	0.016	-0.001	0.002
Health characteristics				
Medically underserved area	-0.175	0.196	0.001	0.035
Percent of MATs covered by Medicaid	-2.555	1.518	0.323***	0.084
Expanded Medicaid	0.131	0.307	-0.072**	0.021
Medicaid score 2007	0.127	0.193	-0.030*	0.015
Percent of poor adults with insurance 2009	0.014	0.015	0.001	0.035
Opioid dispensation rate per 10 persons 2009	0.167***	0.027	0.016*	0.006
Substance use during pregnancy laws				
Required to report substance use	-0.193	0.260	0.015	0.023
Required to test if suspected	0.323	0.264	0.146*	0.037
Targeted programs for pregnant women	-0.226	0.199	0.010	0.022
Priority access to substance use treatment	-0.368	0.313	-0.047	0.028
Protection from discrimination	-0.408	0.334	0.016	0.025
Intercept	1.611***	0.393	0.104*	0.049
Residual variance	0.799***	0.227	0.007	0.004

Note: β = beta coefficient; SE = standard error; FPL = federal poverty line; MAT = medication-assisted treatment. * $p < 0.05$; ** $p < 0.01$; $p < 0.001$.

Figure 3.3 plots the predicted growth curves for counties with varying opioid dispensation rates. The increase in slope associated with greater opioid dispensation rates means that the rates of substance use-associated foster care entry diverged over time

depending on a county's opioid dispensation rate. For example, the substance use-associated foster care entry rate in 2018 for a county with an opioid dispensation rate at the 80th percentile (2.16 entries per 1,000 children) was twice as large as the same rate for a county with an opioid dispensation rate at the 20th percentile (0.99 entries per 1,000 children). In addition, greater Medicaid coverage of medication-assisted treatments was associated with a larger increase in rates between 2009 and 2018: having one more drug covered by Medicaid (i.e., a 0.10 point increase) was associated with 0.03 more entries per year. Counties in states that expanded Medicaid experienced a smaller increase in substance use-associated foster care entry rates per year than counties in states that did not expand Medicaid, as did counties in states with better Medicaid scores. Lastly, counties in states that require testing if substance use during pregnancy is suspected experienced a greater increase in substance use-associated foster care entry rates between 2009 and 2018.

Figure 3.3. Predicted Growth Curves of Substance Use-Associated Foster Care Entry Rates, by Opioid Dispensation Rate, 2009-2018



DISCUSSION

County-level rates of substance use-associated foster care entry declined by approximately 8.19% per year between 2005 and 2009 but increased by approximately 6.16% per year between 2009 and 2018. This study used latent growth curve models to examine variation in individual counties' trajectories during these two time periods. As predicted by the hypothesis that geographic disparities in substance use-associated foster

care entry rates would reflect geographic variation in substance use, county-level opioid dispensation rates were associated with higher rates of substance use-associated foster care entry at 2005 and 2009, as well as greater growth in these rates between 2009 and 2018. In addition to a greater supply of opioids perhaps increasing substance use rates, caseworkers may also be better able to recognize substance use disorders and more aggressive in removing children from homes in areas where substance abuse is more prevalent (Ghertner et al., 2018). I hypothesized that Medicaid expansion and generosity would be associated with lower growth in substance use-associated foster care entry rates both because greater availability of substance use treatment would help substance-using parents avoid contact with the child welfare system in the first place as well as help them avoid losing custody of their children once in contact with the system. These hypotheses were partially supported. Counties in states whose Medicaid program covered more medication assisted treatments for substance use disorders had a lower rate of substance use-associated foster care entry in 2005, but greater growth in these rates between 2009 and 2018. Medicaid expansion and greater Medicaid generosity was associated with lower growth in rates between 2009 and 2018.

In terms of sociodemographic characteristics, I hypothesized that counties in Republican states, with greater rates of poverty, unemployment, and female incarceration, lower educational attainment, and higher income inequality would have greater baseline rates of substance use-associated foster care entry and larger growth in these rates over time. These hypotheses were based on the idea that, first, socioeconomic conditions represent fundamental causes of substance use and, second, that socioeconomic factors condition the association between parental substance use and foster care entry. Only a few of these hypotheses were supported. Poverty rates in 2005 were positively associated with baseline rates of substance use-associated foster care entry in that same year. A

larger Gini coefficient (representing greater income inequality) and a lower percentage of adults with bachelor's degrees in 2009 were associated with greater baseline rates of substance use-associated foster care entry in 2009. Counties in Republican states had a lower baseline rate of substance use-associated foster care entry in 2005, but greater growth between 2005 and 2009. Contrary to expectations, female incarceration was not associated with substance use-associated foster care entries at all.

Because a large proportion of children who enter the foster care system due to parental substance use are infants who show signs of prenatal drug exposure at birth, I hypothesized that variation in state policy regarding prenatal drug exposure may produce geographic disparities in substance use-associated foster care entry rates. Certain policies may put women at greater risk of contact with the child welfare system, while others may help women avoid losing custody of their children through greater access to substance use treatment. Specifically, I hypothesized that counties in states with substance use reporting and testing requirements would have higher rates of substance use-associated foster care entry at baseline and over time and that counties in states with policies facilitating access to substance use treatment for pregnant women would have lower growth in these rates over time. Evidence for these hypotheses were mixed. Between 2005 and 2009, counties in states that required healthcare workers to report suspected prenatal drug use experienced less of a decline in these rates compared to counties in states without this policy. Similarly, required reporting was associated with a greater increase in rates between 2009 and 2018. Some policies facilitating access to substance use treatment programs for pregnant women were associated with a greater decline in rates (targeted programs and discrimination protection), but others were associated with less of a decline (priority access to programs).

The mix of expected and unexpected findings suggests that the link between parental substance use (and its predictors) and foster care entry does not simply reflect a straightforward relationship in which greater parental substance use necessarily produces greater substance use-associated foster care entry rates. Rather, socioeconomic conditions and policies condition the extent to which healthcare professionals, caseworkers, and judges use parental substance use as a basis for child welfare intervention. Regarding health care policy, contrary to expectations, greater coverage of MATs was associated with larger growth in substance use-associated foster care entry rates between 2009 and 2018. As more people enter substance use treatment programs due to greater MAT availability and coverage (Meinhofer & Witman, 2018), they also become more visible to healthcare workers who may notify child protective services. In addition, a parent's usage of MATs may contribute to a caseworker or judge's decision to remove a child, as well as a healthcare professional's decision to report parental substance use. Some child welfare workers and associated professionals have negative views of MATs: judges and caseworkers interviewed by Radel and colleagues (2018) reported that long-term use of MATs was not compatible with successful parenting and simply represented another type of addiction. Lastly, neonatal abstinence syndrome, which healthcare workers may report to child protective services as prenatal drug exposure, can be caused by usage of MATs (Goodman, Whalen, & Hodder, 2019). Indeed, counties with more maternal substance use treatment programs had higher rates of neonatal abstinence syndrome (Faherty et al., 2019).

Regarding the findings related to sociodemographic findings, the somewhat unexpected finding regarding lower substance use-associated foster care rates in Republican states in 2005 might reflect different timing in the spread of the opioid and other drug epidemics between Republican and Democratic states (Jalal et al., 2018).

Female incarceration did not play a role in these rates during the time period studied here; the growth in female incarceration rates was most dramatic between 1980 and 2000 and only increased marginally between 2005 and 2018 (The Sentencing Project, 2020). Perhaps the majority of new foster care entries linked with female incarceration had already occurred prior to 2005. The two other unexpected findings were related to income inequality and unemployment rates. Counties with higher Gini coefficients had lower rates of substance use-associated foster care entry rates in 2005; greater unemployment was also associated with lower rates in 2009. It is unclear why higher inequality would be associated with lower rates of substance use-associated foster care entry; perhaps greater income inequality in an area reflects greater availability of higher quality services and programs than would be available in an area with lower inequality but overall lower incomes. The finding regarding unemployment is not unprecedented, and it may be that unemployment may be protective against child maltreatment due to increased time with children and greater availability of low-cost child care (e.g., unemployed family and friends) (Raissian, 2015).

I hypothesized that policies facilitating access to substance abuse treatment for pregnant women would be associated with lower baseline rates and growth in substance use-associated foster care entry; the opposite would be true for policies encouraging greater reporting and detection of prenatal substance use. Results partially supported these hypotheses. Counties in states that required reporting had a lower baseline rate, but greater growth over time; conversely, counties in states that required testing if drug use was suspected had a greater baseline rate but lower growth over time. Perhaps testing helps healthcare workers facilitate access to substance use treatment through early detection without necessarily involving the child welfare system. The only policy facilitating access that was associated with lower growth in rates was discrimination

protection for pregnant women in substance use treatment programs. The other two, targeted programs and priority access for pregnant women, were associated with greater growth. It may be that women who participate in substance use treatment are then at greater risk of coming into contact with child protective services via reporting by professionals in these programs. Between 2009 and 2018, requiring testing if drug use is suspected worked in the opposite direction than in 2005-2009 such that counties in states with required testing experienced greater growth. Taken together, these findings suggest that these policies may result in net widening. Net widening in this context refers to the process in which professionals in the associated systems (e.g., healthcare workers, substance use counselors, child welfare caseworkers) initiate child maltreatment investigations in order to facilitate access to substance use treatment (Lloyd, Luczak, & Lew, 2019). An unintended consequence is that children who may have been able to remain at home safely may end up in the foster care system. Future research should refine these findings by considering variation in when these policies were implemented and interactions between them. It may be that states need to implement multiple types of policies facilitating access to substance use treatment for pregnant women before reductions in substance use-associated foster care entry rates will occur.

Limitations

As with all studies utilizing observational data, these findings cannot be interpreted as causal. There may be unobservable confounds that would explain the significant associations reported in this study. Longitudinal fixed-effects models are better suited to account for unobserved traits of counties in identifying how characteristics shape variation within counties over time; however, these models cannot assess variation between counties. The goal of this study was not to isolate causal effects

of the included characteristics, but rather to describe whether and how these characteristics are associated with differences in baseline rates of substance-use associated foster care entry and in the growth of these rates over time. Latent growth curve modeling is well-suited for this purpose.

Another limitation of this study is the measurement of substance use as a factor associated with a child's removal from the home. Practices in detecting and defining substance use differs across jurisdictions and in many cases is left up to the discretion of the caseworker. Thus, some unexplained variation in substance use-associated foster care entry rates is almost certainly due to variation in how agencies assess substance use (e.g., by a drug screen, assessment by a licensed substance abuse counselor, observations by the caseworker). In response to this challenge, researchers have called for the AFCARS to standardize how states report substance use (Seay, 2015). Nevertheless, the AFCARS remains the most accurate and comprehensive sources for foster care caseload data in the United States.

A final limitation of this study is missing county foster care entry data. AFCARS masks the county identifier for any county with fewer than 1,000 foster care cases in a given year. Thus, rural counties with few total cases (but possibly high rates) were excluded from this study, meaning that the generalizability of the findings in this study are limited to more densely populated counties. In addition, many counties included in this study had data in some years but not others due to their foster care caseloads being below 1,000 in some years. To address this problem, I used full-information maximum likelihood estimation, which assumes that the missing rates were a function of covariates and rates in non-missing years. Lastly, because I used both state- and county-level covariates, it would have been ideal to use a multilevel modeling strategy that explicitly models counties as nested within states. However, this type of analysis would have been

underpowered given the county sample size. The average number of counties per state was four, and many states only had one county. Thus, I instead used robust standard errors to adjust for the clustering of counties within states. Despite these limitations, using counties as the unit of measurement had its advantages. Child protective services are often organized at the county level and have significant variation in their practices and types of cases (Font, Sattler, Gershoff, 2018), thus they represent a meaningful source of heterogeneity which might be obscured if analyzing state-level rates. In addition, using counties provides a larger sample size and allows greater precision in estimates (Eckenrode et al., 2014).

Conclusion

This study used latent growth curve modeling, foster care data from the Adoption and Foster Care Analysis and Reporting System, and state- and county-level data on sociodemographic, health, and drug policy to assess what factors predicted the level and change in substance use associated-foster care entry rates between 2005 and 2019. There were four main takeaways from this study. First, opioid dispensation was positively associated with counties' rates of substance use-associated foster care entry in 2005 and 2009, as well as greater growth in these rates between 2009 and 2018. These results support a growing body of evidence that the opioid epidemic has negative spillover effects for families in the form of child welfare system involvement (Ghertner et al., 2018; Quast, 2018). Second, Medicaid expansion and generosity was associated with lower growth in foster care entry rates between 2009 and 2018, suggesting that improved access to health care can support family functioning. Additionally, coverage of medication-assisted treatments, which was hypothesized to be associated with lower growth in foster care entry rates, was associated with lower rates in 2005 but greater

growth between 2009 and 2018. Taken together with the findings regarding Medicaid expansion and generosity, it may be that preventative health care helps parents avoid medical problems that would lead to opioid usage in the first place. At the point that parents need substance use treatment, the risk of child protective services involvement outweighs the protective effect of greater access to treatment. Nevertheless, early and equitable access to substance use treatment is critical. Third, mixed findings regarding the association between county-level sociodemographic variables and substance use-associated foster care entry rates suggest that certain sociodemographic markers (e.g., low educational attainment, high poverty, high inequality, high unemployment, and a weak social safety net) are not simply proxies for greater substance use. For example, the fact that greater unemployment was associated with lower rates in 2009 suggests that unemployment is not just a proxy for constrained economic opportunity that leads to greater substance use and, in turn, foster care entry due to parental substance use. Lastly, mixed results regarding policies that expand access to substance use treatment for pregnant women suggest that a combination of countervailing forces – e.g., increased detection of prenatal substance use and greater accessibility of treatment – interact in complex ways to shape foster care entry rates associated with parental substance use. It may be that substance abuse treatment decreases the chances of losing custody of their children for some pregnant women, but increases the chances of other women. These speculations require further research to confirm. Regardless, healthcare workers should work to ensure that mothers in substance use treatment feel safe and respected, as many women in this position report fear of child protective services, stigma, and poor treatment by past providers as barriers to seeking treatment and health care (Falletta et al., 2018; Frazer et al., 2019). Child welfare caseworkers should work with parents to ensure that case plan goals, such as mental health and substance use treatment, are attainable with the

resources (e.g., transportation and childcare) currently available (Reich, 2005). Lastly, not all children whose parent(s) have a substance use disorder may need to be removed from the home. When children can remain safe at home while parents receive substance use treatment, removing the child to foster care may only create unnecessary trauma for the family and put stress on an already overburdened child welfare system.

Chapter 4. Study III: Medicaid Expansion, Medicaid Generosity, and Reunification among Parental Substance Use-Associated Foster Care Entries

INTRODUCTION

For most children in foster care, reunification, i.e. returning to live with their parents following time in the foster care system, is the preferred goal for their long-term living situation. In recent decades, the number of children in foster care due to parental substance use has risen dramatically – a population of children who are less likely to reunify than children whose removal was not associated with their parents' substance use (Lloyd & Akin, 2014). Between 2000 and 2017, the number of foster care entries associated with parental drug use increased by 147% from 39,130 to 96,672 removals (Meinhofer & Angleró-Díaz, 2019); in 2019, 34% of foster care entries were associated with parental drug use, which was the second most common reason for removal after neglect (U.S. Department of Health and Human Services, 2020). One of the major predictors of reunification among families in foster care is child welfare workers' perceptions of parents' compliance with case plan goals (Wulczyn, 2004). For parents whose child was removed due to substance use, successfully undergoing substance use treatment is typically a major case plan goal. Compliance, however, depends not only on a parent's willingness to engage in services, but a parent's ability to access and pay for these services as well. Two major factors that could potentially promote access to substance use treatment are Medicaid expansion and Medicaid program generosity, but no study has investigated whether these factors also translate into a greater likelihood of reunification among foster care children with parental substance use. To address these gaps in knowledge, this study uses multilevel event history modeling and longitudinal administrative data from the Adoption and Foster Care Analysis and Reporting System to

examine the associations between Medicaid expansion, Medicaid program generosity, and reunification.

Permanency Planning and Children Removed from the Home due to Parental Substance Use

The assumption that it is within children's best interests to be raised by their biological parents pervades federal child welfare policy (Wulczyn, 2004). The Adoption Assistance and Child Welfare Act of 1980 and the Adoption and Safe Families Act of 1997, two of the major pieces of legislation underlying the current child welfare system, require states to make reasonable efforts towards reunification except in the most extreme circumstances. Families themselves also largely prefer reunification (Font, Berger, Cancian, & Noyes, 2018), many of whom experience the child's removal from the home as distressing, if not traumatic (Nixon, Radtke, Tutty, 2013; Kenny, Barrington, & Green, 2015). When a child enters foster care, federal law mandates that child welfare agencies create a permanency plan for the child. These plans include the goal for permanency (i.e. where a child will live permanently following foster care) and the tasks required to achieve the goal (e.g., substance use treatment, counseling, parenting classes). Reunification with parents or other primary caregivers was the permanency plan goal for 55% of children in foster care in 2019, and 47% of children who exited foster care that year reunified with parent(s) or primary caregivers. Due in part to legislation that encourages quicker placement decisions, 46% of children who exited foster care in 2019 spent less than a year in foster care (USDHHS, 2020).

The emphasis on timely permanency planning in federal child welfare policy is at odds with the realities faced by the growing number of children entering foster care due to parental substance use. The Adoption and Safe Families Act (ASFA) of 1997 requires, with a few exceptions, the termination of parental rights for children who have been in

foster care for 15 out of the last 22 months. This legislation presents a challenge to parental rights for parents struggling with substance use disorders, which are rarely resolved within 15 months (Harris-McKoy et al., 2014). On the other hand, ASFA was also successful in calling national attention to substance use issues within the child welfare system and highlighting the necessity of timely access to substance use treatment. The decade following ASFA saw the development of family drug courts, interagency collaborations between the child welfare system and substance use treatment programs, and new child welfare professions dedicated to substance use counseling (Center for the Study of Social Policy, 2009). Despite this progress, however, children who enter foster care due to parental substance use have lower rates of reunification and a greater risk of re-entry compared to children whose removal was not associated with parental substance use (Brook & McDonald, 2009). Furthermore, children exposed prenatally to drugs – the majority of children entering the foster care system due to parental drug use (Meinhofer & Angleró-Díaz, 2019) – are at risk of long-term developmental and behavioral problems (Ross, Graham, Money, & Stanwood, 2014). Given their growing numbers and unique challenges, children who enter the foster care system due to parental substance use are an important subpopulation of foster care youth whose predictors of reunification need to be better understood.

Predictors of Reunification

Several decades of research has yielded generally consistent findings regarding demographic differences in children's likelihood of reunification. Black children are less likely than white children to reunify (Wittenstrom et al., 2015), as are younger children compared to older children (Wulczyn, 2004). Gender is typically not associated with reunification (Connell et al., 2006), although some studies show lower rates of

reunification for boys compared to girls (Harris & Courtney, 2003). Other relevant characteristics include child health and types of maltreatment. Children with disabilities are less likely to reunify than children without disabilities (Akin, 2011). Regarding type of maltreatment, some studies show that children removed from the home due to physical or sexual abuse are more likely to be reunified than those removed due to neglect (Wells & Guo, 1999; Putnam-Hornstein & Shaw, 2011), but others find no differences by maltreatment type (Cheng & Li, 2012). Recently, particularly in the context of the opioid epidemic, researchers have paid more attention to the role of parental substance use in child welfare outcomes, including reunification. Children who are removed from the home due to parental substance use are less likely to reunify than those who did not (Brook et al., 2010); this association is particularly strong among infants (Lloyd, Akin, & Brook, 2017). Consistent with racial differences in reunification overall, Black children are less likely to reunify compared to white children among those removed from the home due to parental substance use (Sieger, 2020). Whether reunification occurs is based on child welfare workers and courts' belief that the birth family can provide a safe, supportive, and stable environment for the child (Child Welfare Information Gateway, 2017b). It may be that these observed demographic and case-related differences in the likelihood of reunification represent differences in risk profiles, but caseworker discretion and perceptions of caregivers' compliance and motivation to work towards case plan goals also play a major role in the decision to reunify (Reich, 2005).

Moving beyond largely unmodifiable individual-level factors (e.g., age, race, disability) associated with reunification, situating families within a larger social-structural context is critical for understanding how policy and practice further shape the likelihood of reunification. One way the community context influences parental and child wellbeing is through the availability of resources like childcare, healthcare, and employment

opportunities (Leventhal & Brooks-Gunn, 2000). These resources can directly support family wellbeing by providing the material necessities for ensuring children's health and safety, as well as indirectly by lowering parental stress, thereby reducing the risk of harsh parenting practices (Conger, Conger, & Martin, 2010). In turn, when caseworkers and judges can observe a parent's attempts to secure these resources for their household and improve their parenting practices, they will be more likely to promote reunification as the permanency plan.

Neighborhood (Molnar et al., 2016), county (Eckenrode et al., 2014), and state (Raissian & Bullinger, 2017) contextual variables have been linked with child maltreatment and foster care entry, as well as reunification. For example, youth in urban (compared to rural) counties and in counties with a greater Black population and single parent households had lower rates of reunification as well as longer times to reunification (Wulczyn, Chen, & Courtney, 2011). Other contextual variables related to child welfare agency practices also shape the likelihood of reunification. LaBrenz, Fong, and Cubbin (2020) found that a state's average time to reunify was positively associated with successful reunification, suggesting that allowing families a longer time to address the initial maltreatment concerns can promote stable reunification. Putnam-Hornstein and Shaw (2011) found that county-level foster care entry rates were positively associated with reunification rates and suggest that counties with higher foster care entry rates are likely removing more children in less extreme circumstances, who in turn are more likely to be reunify. Fewer studies have specifically examined how the availability of socioeconomic and health resources at the state level influences reunification. One exception is the work of Sanmartin and colleagues (2020), who found that reunification rates among infants who entered the foster care system due to parental substance use were lower in states with policies that criminalized prenatal substance use, suggesting

that punitive policies inhibit parents' ability to access substance use treatment. In addition, Wells and Guo (2004) found that implementation of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 was associated with more time to reunification and lower rates of reunification. They hypothesized that this finding was due to a loss of income, which caseworkers may interpret as a lack of resources (and/or willingness to procure such resources) necessary to keep a child safe and healthy.

Medicaid Expansion, Program Generosity, and Reunification

Like welfare reform, the Patient Protection and Affordable Care Act of 2010 is a major policy shift affecting families' household economics with potential implications for child welfare outcomes. One critical provision of the Affordable Care Act was the expansion of Medicaid, the single largest source of health coverage in the United States. This expansion extends Medicaid eligibility for all adults ages under age 65 with incomes up to 138% of the federal poverty level. However, a 2012 Supreme Court decision made this expansion optional for states. As of early 2021, 38 states and the District of Columbia have expanded Medicaid. Eligibility for coverage varies in states that did not expand Medicaid but is generally much more stringent than the 138% federal poverty line threshold. For example, the income limit for Medicaid eligibility for parents in Texas is only 17% of the federal poverty line (The Kaiser Family Foundation, 2020). Among new mothers in poverty in expansion states, the average increase in Medicaid eligibility was associated with a 28% decrease in uninsurance and a 13% increase in Medicaid coverage (Johnston, McMorrow, Thomas, & Kenney, 2020). In addition, residents in states that have expanded Medicaid have experienced better access to care, greater affordability, and improved self-reported health (Antonisse et al., 2017).

Few studies have specifically examined how Medicaid expansion has shaped child welfare outcomes, although there are several reasons to believe such associations exist. Medicaid expansion may improve the likelihood of reunification for children removed from their homes due to parental substance use in particular for three reasons. First, and most directly, Medicaid expansion can facilitate access to substance use treatment. In most cases, the permanency plan for a child removed from the home is reunification (USDHHS, 2020), and substance use treatment is often a component of this plan. Successfully completing substance use treatment not only helps to address the underlying problems leading to child welfare intervention, but also demonstrates to caseworkers and judges a parent's commitment to regaining custody (Reich, 2005). Indeed, successful completion of substance use treatment predicts a greater likelihood of reunification (Murphy, Harper, Griffiths, & Joffrion, 2017). Medicaid expansion was associated with a greater uptake of drugs used in medication-assisted treatments (Sharp et al., 2018), greater treatment availability (Meinhofer & Witman, 2018), and greater treatment utilization (Mojtabai et al., 2019), as well as a reduction in opioid overdose deaths (Kravitz-Wirtz et al., 2020).

A second reason that Medicaid expansion may be associated with a greater likelihood of reunification is improved access to healthcare in general. Doab, Fowler, and Dawson (2015) found that substance-using mothers with a child in foster care had multiple unmet health needs, such as a need for family healthcare, family planning, and mental health support, and that these mothers were more likely to reunify when multiple needs could be met. Medicaid expansion has been associated with increased access to family planning services (Darney et al., 2020), primary care (Sommers, Blendon, Oray, & Epstein, 2016), family healthcare (Venkataramani, Pollack, & Roberts, 2017), and mental health services (Winkelman & Chang, 2018). In addition to having these needs directly

met, seeing a healthcare provider may also facilitate finding other community-based resources, such as home visitation programs.

Third, Medicaid expansion may indirectly promote reunification by reducing poverty (Zewde & Wimer, 2019) and increasing housing stability (Zewde, Eliason, Allen, & Gross, 2019), which support parents' mental wellbeing and ability to care for their children (McMorrow, Gates, Long, & Kenney, 2017). Supporting this hypothesis, Brown and colleagues (2019) found that Medicaid expansion was associated with lower rates of child neglect, which often reflects parents' inability to meet their family's basic material needs. Thus, insofar that Medicaid expansion addresses multiple unmet needs of families with children in the foster care system – ranging from substance use treatment to housing stability – it may also be associated with a greater likelihood of reunification.

In addition to whether or not states have expanded their Medicaid programs, states vary widely in their specific policies and coverage. While some studies show an increase in substance use treatment utilization in expansion states (Meinhofer & Witman, 2018; Sharp et al., 2018), others do not (Olfson et al., 2018; Gertner et al., 2020), which may be due to variability in the extent to which Medicaid programs fund substance use treatment. One major form of effective substance use treatment is medication-assisted treatment (MAT), which involves supplementing counseling with medications that reduce withdrawal symptoms, decrease cravings, and block the effects of opioids or alcohol. MATs, specifically naloxone, are also used to prevent opioid overdose by reversing the toxic effects of opioids. Medicaid generally covers patient costs for these types of treatments, although coverage of specific drug types and eligibility differ by state (Grogan et al., 2016). Furthermore, Medicaid expansion status is not associated with state's coverage of MATs (see Table 4.1), suggesting that coverage of MATs is not simply a function of the generosity of a state's Medicaid program. In one study, greater

coverage of MATs strengthened the positive association between Medicaid expansion and MAT utilization (Meinhofer & Witman, 2018). State Medicaid programs also vary more generally in terms of eligibility for specific services, affordability, and scope and quality of services (Arellano & Wolfe, 2007). These factors may shape parents' access to healthcare independently of or jointly with a state's Medicaid expansion status. For example, the generosity of fees paid to primary care physicians under Medicaid influences the number of physicians willing to accept Medicaid patients (Brunt & Jensen, 2014), which in turn is associated with patients' satisfaction with and access to healthcare (Barnett, Clark, & Sommers, 2018). Thus, the likelihood of reunification may be shaped not only by Medicaid expansion, but also other facets of a state's program.

The Current Study

Although there is a vast literature on the effects of Medicaid expansion on health outcomes, fewer studies (e.g., Brown et al., 2019) examine how Medicaid may be associated with child welfare outcomes. Other studies document how state-level variation in socioeconomic policy (Raissian & Bullinger, 2017; Kovski et al., 2021) has spillover effects on child maltreatment; this study extends this literature to consider the role of state-level health policy on the outcomes of children who have already experienced maltreatment. Specifically, the current study uses data from the 2014-2018 annual Foster Care Files from the Adoption and Foster Care Analysis and Reporting System (AFCARS) and multilevel event history models to analyze how Medicaid expansion and generosity are associated with reunification among children removed from the home due to parental substance use. I hypothesize that the odds of reunification among children in foster care due to parental substance use will be higher in states that have expanded Medicaid. Furthermore, among states that have expanded Medicaid, greater Medicaid

generosity and coverage of MATs will be associated with a greater likelihood of reunification.

DATA, MEASURES, AND METHODS

Data

The AFCARS system is a federally mandated data collection effort designed to track the characteristics of the foster care population and assess programs and policies related to the foster care system (Children's Bureau, 2019). States must report data on all children for whom a state child welfare agency has responsibility for their placement, care, or supervision, including any children who have been removed from their home for more than 24 hours. Children who live outside of their parents' home without formal involvement of a public child welfare agency are not included in this data. Information collected includes child demographics and health, foster caregiver demographics, case characteristics, and foster care placement types. States submit this data twice yearly to the Children's Bureau, who then cleans and compiles this data into a single foster care file per year with one record per child. Children have a unique ID that can be linked across years. Thus, in addition to assessing population trends and policy changes, the AFCARS data can also be used to examine children's trajectories through the child welfare system.

State-level data came from several sources. The Kaiser Family Foundation (2021) compiles the status of Medicaid expansion and dates of implementation for each state on their website. State Medicaid scores came from report published by the Public Citizen Health Research Group (Arellano & Wolfe, 2007) and Medicaid medication-assisted treatment coverage came from a report by the Substance Abuse and Mental Health Services Administration (2018). Demographic data was from the 2014-2018 American

Community Surveys (ACS) one-year estimates (U.S. Census Bureau, 2019) and opioid dispensation rates were from the Centers for Disease Control and Prevention (2020).

When multiple years of the AFCARS are appended together, the data can be sorted by child IDs to create a long dataset with each observation representing a child-year. Between 2014 and 2018, there were 3,384,354 child-years with valid IDs made up of 1,626,046 children. The AFCARS data contains fifteen dichotomous variables indicating reasons for placing the child in foster care. A case was considered to be associated with parental substance use if one of the reasons for removal was parental drug abuse, or if one of the reasons was child drug abuse and the child was younger than one year old (indicating prenatal drug exposure). I limited the sample to cases associated with parental substance use, resulting in 1,105,960 child-years (32.7% of the total 2014-2018 sample). Next, I dropped 452 child-years with ages at foster care entry older than 20, 221 child-years missing data on gender or urbanicity of residence, and 3,261 child-years in Puerto Rico. Lastly, as my analyses model time to first reunification, I dropped 104,584 child-years in which children re-entered foster care following reunification. My final analytic sample was 997,442 child-years, representing 510,051 children.

Measures

Reunification

Reunification was a dichotomous variable measured at each year based on two variables: if the child left foster care and if so, for what reason (reunified with parent, living with relatives, adoption, emancipation, guardianship, transfer to another agency, runaway, or death). It was coded as "0" in years that a child did not leave foster care; and "1" when a child left foster care because they were reunified with their parent(s). (Recall

that children were censored if they left foster care due to reasons other than reunification and thus will have all "0"s for this variable.)

Child Covariates

Covariates were selected based on prior empirical work demonstrating associations between the following child characteristics and likelihood of reunification. I included three dichotomous variables indicating if the following types of maltreatment were associated with the child's entry into foster care in addition to parental substance use: *physical abuse*, *sexual abuse*, and *neglect*. *Disability status* was a dichotomous variable based on whether or not the child had a clinically diagnosed disability. I also included a dichotomous variable to indicate of the child was missing data on disability status (1.94% of children). Child's *race/ethnicity* had the following categories: non-Hispanic white, non-Hispanic Black, non-Hispanic American Indian or Alaska Native, non-Hispanic Asian, non-Hispanic Hawaiian or other Pacific Islander, non-Hispanic more than one race, and Hispanic (of any race). Like disability status, I included a dichotomous indicator for missing data on race/ethnicity (1.68% of children). *Urbanicity of residence* was based on a variable indicating the level of urbanicity of the child's county of residence. Each county is categorized into one of the nine codes of the 2013 Rural-Urban Continuum Codes created by the U.S. Office of Management and Budgeting. I collapsed this variable into four categories (Okpych, 2015): large metropolitan (metropolitan counties with one million or more people), metropolitan (metropolitan counties up to one million people), nonmetropolitan (nonmetropolitan counties with an urban population of at least 2,500 people), and rural (counties with an urban population less than 2,500 people). Because children who are in foster care longer are less likely to be reunified with their families, I included a measure of the *number of*

years in foster care at 2014. Lastly, I included *age at foster care entry* and *gender* (male or female).

State Medicaid Characteristics

Medicaid expansion was a dichotomous variable indicating whether or not a state had implemented expanded Medicaid coverage by January 1, 2014. See Section 4.3.3 for a discussion of alternate specifications of this variable (i.e., including states with expansions after this date).

Medicaid score was a continuous variable hypothetically ranging from 0 to 1000 created in 2007 by the Public Citizen Health Research Group, a nonprofit consumer advocacy organization focused on improving healthcare affordability and accessibility. Experts scored state Medicaid programs based on 55 indicators across four categories: eligibility, scope of services, quality of care, and reimbursement. Each state received a score for each of these categories (out of 350, 200, 200, and 250 points, respectively) as well as an overall score out of 1,000 points based on the sum of the four categories.[1] For this study, the overall score was used. States varied greatly in their overall Medicaid score: the highest-ranked state, Massachusetts, had a score (645.9 points) twice as large as the lowest-ranked state, Mississippi (317.8 points). For more details on the scoring process, see (Arellano & Wolfe, 2007). Researchers have used these scores in studies examining the associations between Medicaid generosity and outcomes like population health (Montez, Zajacova, & Hayward, 2016) and service utilization (Vanneman et al.,

[1] The original report by the Public Citizen Health Research Group did not publish an overall Medicaid score for Tennessee because TennCare does not pay providers fee-per-service like other states and thus did not have a reimbursement score. Instead of dropping Tennessee from the analysis, I calculated a comparable score for Tennessee by adding together its three scores, dividing the total by 750 possible points, and multiplying by 1000.

2018), but no previous studies have examined how Medicaid generosity may be associated with child welfare outcomes.

Medicaid coverage of medication-assisted treatments (MATs) was the percentage of the ten types of medication approved by the FDA for drug or alcohol use disorder covered, i.e., reimbursed, by a state's Medicaid program. Medication coverage ranged from 60% to 100%.[2]

State Covariates

I included four sociodemographic covariates drawn from the 2014 American Community Survey. The *Gini index* was a measure of household income inequality and ranged from 0 to 100, with 0 representing perfect equality (i.e., all households have exactly the same income) and 100 representing total inequality (i.e., one household has all of the income). The *poverty rate* indicated the percent of the population living in a household below 150% of the federal poverty line. The *unemployment rate* was the percentage of adults ages 16 and up who were currently in the labor force (i.e., available and looking for work) and unemployed. The *percent of adults with a bachelor's degree* was the percent of adults 25 years and older with a four year college degree. *Voted for Bush in 2000* was a dichotomous variable indicating if that state voted for George W. Bush in the 2000 presidential election, a rough proxy for the state's political climate and social safety net generosity. Lastly, the *opioid dispensation rate* measured the number of opioid prescriptions (as identified using National Drug Codes) dispensed per 100 people in 2014. This rate is a conservative estimate of opioid dispensation, because it only includes opioids dispensed at retail pharmacies and excludes mail-order prescriptions,

[2] The following medications are approved for the treatment of opioid or alcohol use disorder: disulfiram, acamprosate, oral naltrexone, extended-release naltrexone, buprenorphine, injectable buprenorphine, extended-release buprenorphine, buprenorphine-naloxone, methadone, and naloxone. All states cover buprenorphine, buprenorphine-naloxone, naloxone, oral naltrexone, and extended-release naltrexone.

prescriptions filled at hospital pharmacies, opioid-containing medications typically used to treat opioid use disorder, and methadone dispensed through methadone treatment programs (CDC, 2020).

Methods

I used multilevel discrete time event history models (Barber, Murphy, Axinn, & Maples, 2000) to estimate the associations between state Medicaid expansion, generosity, and coverage of medication-assisted treatments with foster children's likelihood of reunification. Multilevel modeling was used because I hypothesize that policies at the state level are associated with children's likelihood of reunification. In other words, the odds of reunification for children in the same state are correlated. Ignoring this non-independence of observations in the data would result in the underestimation of standard errors and a greater risk of Type I error (Guo & Zhao, 2000). Discrete time event history analysis allows for the modeling of longitudinal data in which events happen (or are measured) at discrete intervals of time; in this case, whether or not a child is reunified is measured per year. Children were censored after their first reunification or any other event that removed them from foster or adoptive care (e.g., aging out of the foster care system). Time was modeled with four dummy variables, allowing for the most flexibility in modeling how the hazard of reunification differs by year. All continuous variables at the state level were grand mean-centered. Analyses were conducted in HLM 8 (Raudenbush, Bryk, Cheong, & Congdon, 2019).

Because the outcome variable (reunification or not) was dichotomous, I used a logistic model. When outcomes are non-continuous, HLM estimates two types of models: unit-specific and population-average. Results presented are from the population-average models with robust standard errors, which are most appropriate for making inferences

about differences across populations (e.g., the difference in reunification between children in expansion versus non-expansion states) rather than within children (e.g., the expected change in the likelihood of reunification if a child moved to a state with a different expansion status) (Zeger, Liang, & Albert, 1988).

After dropping the 221 child-years that were missing data on child gender and urbanicity during the construction of the analytic sample, only two variables had missing data: disability status and race/ethnicity. As an alternative to list-wise deletion or multiple imputation, I created two dummy variables indicating if a child was missing data on either of those variables.

RESULTS

Descriptive Statistics and Bivariate Associations

Table 4.1 displays the descriptive statistics of the sample at the child and state level. The first column describes the full sample; the second and third columns compare children who lived in states that did not expand Medicaid in 2014 (62.3%) versus those that did (37.7%). Children in expansion states were younger; more likely to be American Indian/Alaska Native, Asian, Native Hawaiian/Pacific Islander, multiracial, Hispanic, or of an unknown race/ethnicity; and less likely to be non-Hispanic white or non-Hispanic black than children in non-expansion states. They were also more likely to live in large metropolitan or rural areas (compared to metropolitan or urban non-metropolitan areas) and have a disability, less likely to have experienced physical abuse, sexual abuse, or neglect, and had spent more years in foster care by 2014 compared to children in non-expansion states. Overall, 30.07% of children who entered foster care due to parental substance use reunified with their parent(s) by 2018, but there was no significant difference in whether or not children ever reunified by state Medicaid expansion status.

The lower panel of Table 4.1 describes the state-level variables by expansion status. Expansion states had a higher Medicaid score, more adults with a bachelor's degree or higher, a lower opioid dispensation rate, and were less likely to have voted for Bush in 2000 than non-expansion states.

Table 4.1. Description of Sample by Medicaid Expansion Status in 2014 (N = 510,041 Children; N = 51 States)

	Frequency (%) or Mean (SD)		
	Overall	No Medicaid expansion	Medicaid expansion
Individual-level variables (at year entered foster care) [a]			
Ever reunified	30.07%	30.04%	30.13%
Age	3.72 (4.71)	3.95 (4.75)	3.34 (4.63)
Female	48.87%	48.80%	49.00%
Race			
White, non-Hispanic	55.06%	56.06%	53.42%
Black, non-Hispanic	14.50%	16.57%	11.07%
American Indian/Alaska Native, non-Hispanic	2.39%	2.06%	2.92%
Asian, non-Hispanic	0.26%	0.13%	0.49%
Native Hawaiian/Pacific Islander, non-Hispanic	0.17%	0.07%	0.33%
Multiple races, non-Hispanic	7.58%	7.38%	7.89%
Hispanic	18.36%	16.55%	21.43%
Unknown race/ethnicity	1.69%	1.18%	2.53%
Urbanicity			
Large metropolitan area	40.01%	38.32%	42.82%
Metropolitan	35.75%	35.85%	35.57%
Urban, non-metropolitan	21.80%	23.47%	19.04%
Rural	2.44%	2.36%	2.58%
Disability status			
No disability	83.52%	88.10%	75.96%
Has disability	14.53%	10.99%	20.37%
Unknown disability status	1.95%	0.91%	3.67%
Physical abuse	8.99%	11.00%	5.68%
Sexual abuse	1.70%	2.09%	1.07%

Table 4.1 continued on following page

Table 4.1. Description of Sample by Medicaid Expansion Status in 2014 (N = 510,041 Children; N = 51 States), continued

Neglect	62.45%	64.78%	58.61%
Number of years in foster care at 2014	0.47 (1.29)	0.44 (1.23)	0.52 (1.38)
Children N	510,041	317,666	192,375
State-level variables			
Medicaid score [b]	473.57 (85.24)	448.42 (91.71)	499.73 (70.56)
Percentage of medication-assisted treatments covered	89.41 (10.85)	87.31 (12.18)	91.60 (8.98)
Gini coefficient 2014	46.36 (2.11)	45.94 (1.95)	46.81 (2.21)
Percentage of population in poverty 2014	14.87 (3.09)	15.23 (3.03)	14.49 (3.17)
Percentage of population unemployed 2014	6.68 (1.53)	6.49 (1.57)	6.88 (1.49)
Percentage of adults with bachelor's degree or higher 2014 [b]	29.74 (6.09)	27.80 (3.45)	31.75 (7.52)
Opioid dispensation rate 2014 [b]	80.69 (22.04)	88.10 (18.67)	72.98 (22.96)
Voted for Bush in 2000 [b]	58.82%	84.62%	32.00%
State N	51	26	25

[a] All differences by Medicaid expansion status in individual-level variables were statistically significant at $p < 0.05$ except gender and ever reunification. [b] State-level variables were significantly different by Medicaid expansion status at $p < 0.05$

Instead of at the child or state level, Table 4.2 presents descriptive statistics at the child-year level and by reunification status. Children who ever reunified were older, more likely to be non-Hispanic white, Asian, Native Hawaiian/Pacific Islander, multiracial, Hispanic, or of an unknown/race ethnicity than children who never reunified. They were also more likely to live in a metropolitan, non-metropolitan urban, or rural area (versus large metropolitan area); less likely to have a disability, experience physical abuse, or sexual abuse; and had spent fewer years in foster care by 2014 than children who never reunified. Compared to children who never reunified, children who reunified spent fewer foster care years in Medicaid expansion states. Children who reunified spent their foster care years in states with lower Medicaid scores; greater coverage of medication-assisted treatments; lower inequality, poverty, unemployment, and percentage of adults with

bachelor's degrees; with greater opioid dispensation rates. They also spent more years in states that voted for Bush. The descriptive bivariate results did not paint a clear picture of how Medicaid and state-level characteristics were associated with the likelihood of reunification, which requires accounting for both the longitudinal and multilevel nature of the data. Next, I turn to the results of the multilevel discrete-time event history models.

Table 4.2. Description of Sample by Ever Reunification (N = 997,442 Child-Years)

	Frequency (%) or Mean (SD)		
	Overall	Never reunified	Ever reunified
Individual-level variables			
Age	3.63 (4.62)	3.45 (4.64)	4.12 (4.53)
Female	48.70%	48.75%	48.58%
Race			
White, non-Hispanic	54.45%	53.08%	58.14%
Black, non-Hispanic	14.74%	15.75%	12.01%
American Indian/Alaska Native, non-Hispanic	2.51%	2.58%	2.32%
Asian, non-Hispanic	0.26%	0.25%	0.29%
Native Hawaiian/Pacific Islander, non-Hispanic	0.16%	0.16%	0.18%
Multiple races, non-Hispanic	7.83%	7.97%	7.48%
Hispanic	18.60%	18.82%	18.02%
Unknown race/ethnicity	1.45%	1.40%	1.58%
Urbanicity			
Large metropolitan area	40.68%	42.03%	37.03%
Metropolitan	35.51%	35.42%	35.77%
Urban, non-metropolitan	21.45%	20.31%	24.53%
Rural	2.36%	2.24%	2.67%
Disability status			
No disability	82.39%	80.91%	86.41%
Has disability	16.16%	17.81%	11.69%
Unknown disability status	1.45%	1.28%	1.90%

Table 4.2 continued on following page

Table 4.2. Description of Sample by Ever Reunification (N = 997,442 Child-Years), continued

Physical abuse	9.12%	9.49%	8.12%
Sexual abuse	1.79%	1.93%	1.43%
Neglect	63.45%	63.44%	63.48%
Number of years in foster care at 2014	0.48 (1.35)	0.56 (1.48)	0.26 (0.88)
State-level variables			
Medicaid expansion	37.66%	37.98%	36.79%
Medicaid score	446.35 (84.93)	446.55 (84.20)	445.81 (86.87)
Percentage of medication-assisted treatments covered	0.91 (0.09)	0.91 (0.09)	0.91 (0.09)
Gini coefficient 2014	46.91 (1.68)	46.99 (1.66)	46.67 (1.70)
Percentage of population in poverty 2014	15.74 (2.41)	15.79 (2.40)	15.62 (2.43)
Percentage of population unemployed 2014	6.93 (1.20)	6.95 (1.18)	6.86 (1.26)
Percentage of adults with bachelor's degree or higher 2014	28.59 (4.31)	28.65 (4.33)	28.42 (4.26)
Opioid dispensation rate 2014	81.35 (20.19)	81.14 (20.43)	81.92 (19.53)
Voted for Bush in 2000	67.43%	67.37%	67.58%
Child-years *N*	997,442	728,102	269,340

[a] All differences by ever reunification were statistically significant at $p < 0.05$ except gender and neglect.

Multilevel Discrete Time Event-History Models

Model 1 of Table 4.3 included all primary predictor variables and covariates without any interaction terms. When exponentiated, coefficients can be interpreted as the percent change in the odds of reunification in a given year. As seen in Table 4.1, neither Medicaid expansion, Medicaid score, nor coverage of medication-assisted treatments were associated with a child's odds of reunification.

Model 2 of Table 4.3 tested the interaction between Medicaid expansion and coverage of medication-assisted treatments (MATs) in predicting reunification. The association

between coverage of MATs and the likelihood of reunification operated in opposite directions depending on whether a state had expanded Medicaid. Recall that the variable for coverage of MATs ranged from 0.60 to 1.00 and represented the percentage of the ten medications covered by Medicaid. In non-expansion states, each additional medication covered (i.e., a 0.10 increase in the coverage variable), was associated with 89.7% lower odds (*exp*(-0.1082) = 0.897) of reunification. In expansion states, each additional medication covered was associated with a 6.7% increase in the odds (*exp*(0.1734-0.1082) = 1.067) of reunification. Figure 4.1 plots these associations in the scale of predicted probabilities. In non-expansion states with 60% of MATs covered by Medicaid, children's predicted probability of reunification during their first year in foster care is 15.02%, but decreases to 10.29% when 100% of MATs are covered. In expansion states with 60% of MATs covered by Medicaid, children's predicted probability of reunification during their first year in foster care is 10.01%; when the percentage of MATs covered by Medicaid increases to 100%, the predicted probability of reunification rises to 12.62%.

Table 4.3. Multilevel Discrete-Time Event History Models Predicting Reunification

	Model 1		Model 2		Model 3	
	B	SE	B	SE	B	SE
Years in foster care (Reference: 1 years)						
2 year	0.730***	(0.073)	0.730***	(0.073)	0.730***	(0.072)
3 years	0.275**	(0.084)	0.275**	(0.084)	0.275***	(0.084)
4 years	-0.460***	(0.111)	-0.460***	(0.110)	-0.460***	(0.110)
5 years	-1.071***	(0.150)	-1.071***	(0.149)	-1.071***	(0.149)

Table 4.3 continued on following page

Table 4.3. Multilevel Discrete-Time Event History Models Predicting Reunification, continued

State-level predictors						
Medicaid expansion	0.047	(0.068)	0.047	(0.069)	0.054	(0.069)
Medicaid score	-0.001	(0.001)	-0.001	(0.001)	-0.001	(0.001)
Coverage of medication-assisted treatments (MATs)	-0.469	(0.424)	-1.082*	(0.526)	-0.531	(0.417)
Medicaid expansion x coverage of MATs			1.734*	(0.809)		
Medicaid expansion x Medicaid score					0.001	(0.001)
State-level covariates						
Gini coefficient 2014	-3.913	(2.619)	-4.072	(2.396)	-4.504	(2.683)
Percentage of population in poverty 2014	3.456	(2.393)	2.622	(2.167)	3.504	(2.562)
Percentage of population unemployed 2014	-6.005	(3.318)	-4.628	(3.534)	-5.452	(3.170)
Percentage of adults with bachelor's degree or higher 2014	-1.713*	(0.764)	-1.789*	(0.842)	-1.612*	(0.770)
Opioid dispensation rate 2014	-0.006*	(0.002)	-0.005*	(0.003)	-0.007*	(0.002)
Voted for Bush in 2000	-0.166	(0.098)	-0.178	(0.091)	-0.141	(0.106)
Individual-level covariates						
Age	0.035***	(0.002)	0.035***	(0.002)	0.035***	(0.002)
Female	-0.024**	(0.008)	-0.025***	(0.008)	-0.024**	(0.008)
Race (Reference: Non-Hispanic white)						
Black, non-Hispanic	-0.103*	(0.040)	-0.103*	(0.040)	-0.103*	(0.040)
American Indian/Alaska Native, non-Hispanic	-0.380***	(0.099)	-0.380***	(0.099)	-0.380***	(0.099)
Asian, non-Hispanic	0.070	(0.100)	0.071	(0.099)	0.070	(0.099)
Native Hawaiian/Pacific Islander, non-Hispanic	-0.003	(0.092)	-0.001	(0.095)	-0.004	(0.091)
Hispanic	-0.019	(0.037)	-0.019	(0.037)	-0.019	(0.037)
Multiple races, non-Hispanic	-0.108***	(0.019)	-0.108***	(0.019)	-0.108***	(0.019)
Unknown race/ethnicity	0.298***	(0.081)	0.299***	(0.082)	0.298***	(0.080)

Table 4.3 continued on following page

Table 4.3. Multilevel Discrete-Time Event History Models Predicting Reunification, continued

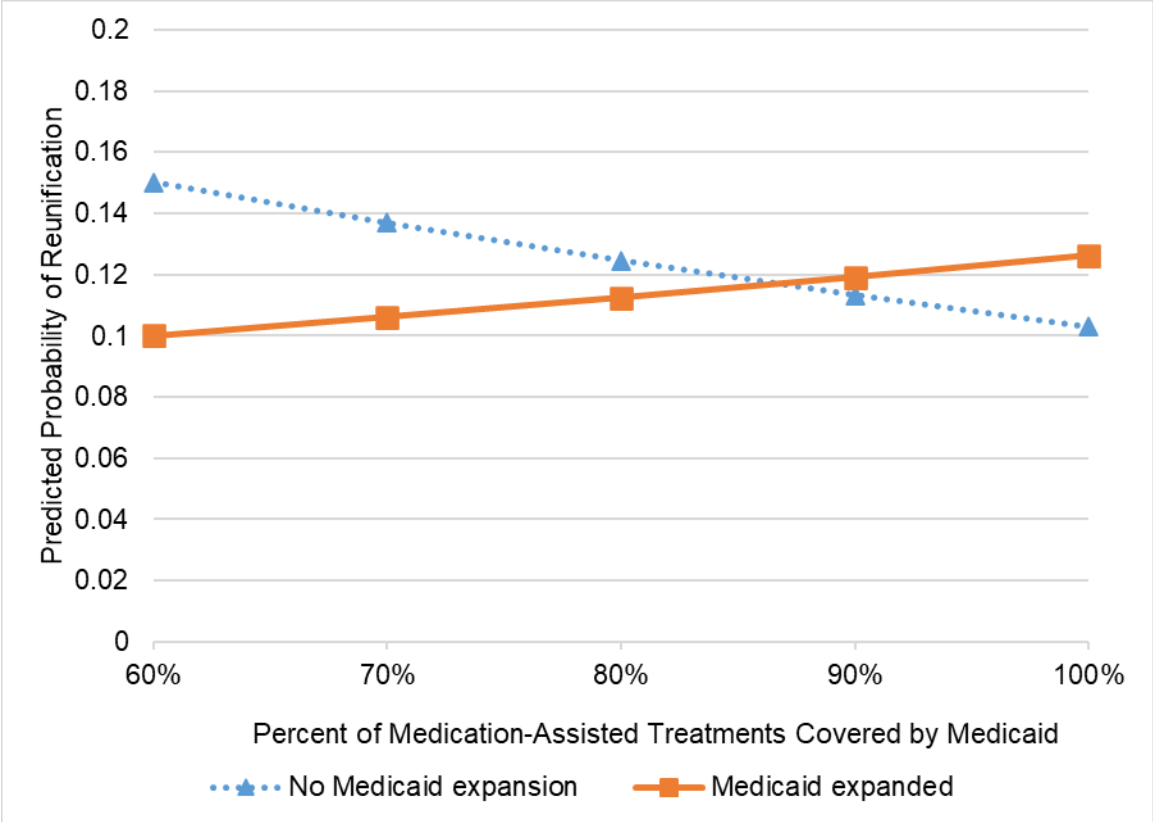
Urbanicity (Reference: Large metropolitan)						
Metropolitan	0.083*	(0.039)	0.084*	(0.039)	0.083*	(0.038)
Urban, non-metropolitan	0.193***	(0.039)	0.193***	(0.039)	0.193***	(0.039)
Rural	0.256***	(0.052)	0.256***	(0.052)	0.256***	(0.051)
Disability status (Reference: No disability)						
Has disability	-0.438***	(0.044)	-0.439***	(0.044)	-0.438***	(0.044)
Unknown disability status	0.718***	(0.188)	0.718***	(0.187)	0.719***	(0.187)
Number of years in foster care at 2014	-0.093***	(0.014)	-0.094***	(0.014)	-0.093***	(0.014)
Physical abuse	-0.010	(0.010)	-0.010	(0.024)	-0.010	(0.024)
Sexual abuse	-0.222***	(0.034)	-0.222***	(0.034)	-0.222***	(0.034)
Neglect	-0.050	(0.029)	-0.050	(0.029)	-0.050	(0.029)
Intercept	-2.046***	(0.077)	-2.087***	(0.072)	-2.063***	(0.076)

Note: * $p < 0.050$; ** $p < 0.010$; *** $p < 0.001$.

Lastly, Model 3 of Table 4.3 tested the interaction between Medicaid expansion and Medicaid score in predicting reunification. This interaction was insignificant, as were the main effects of Medicaid expansion and score, and coverage of MATs. The associations of the state-level and individual-level covariates with the odds of reunification were substantively similar across models. Children were more likely to be reunified in their second or third year of foster care compared to their first, but their odds declined in their fourth and fifth year. Older children, children of an unknown race/ethnicity (compared to white non-Hispanic children), and children with missing data on disability status were more likely to be reunified in a given year. Compared to children in large metropolitan areas, children in metropolitan, urban nonmetropolitan, and rural areas were more likely to be reunified. Non-Hispanic Black, American Indian/Alaska Native, and multiracial children were less likely to be reunified compared to white non-

Hispanic children. Older children, children with a disability, children who experienced sexual abuse, and children who had spent more time in foster care at 2014 were also less likely to be reunified. At the state level, the percentage of adults with a bachelor's degree or higher and the opioid dispensation rate were negatively associated with odds of reunification.

Figure 4.1. Predicted Probabilities of Reunification in First Year of Foster Care, by Medicaid Expansion Status and Coverage of Medication-Assisted Treatments



Sensitivity Analyses

Not all states expanded Medicaid at the same time. Given that the hypothesized mechanism through which Medicaid expansion influences reunification outcomes involves greater access to substance use treatment and preventative healthcare, I make the assumption that the effects of Medicaid expansion would not be immediate. Thus, my main analyses contrasts reunification outcomes in the 26 states who expanded Medicaid at the earliest possible date versus all others. I tested the sensitivity of my results to the coding of states' expansion status among states that expanded Medicaid later than January 1, 2014. I specified sensitivity models four different ways. In the first, I coded Michigan (expanded April 1, 2014) as having expanded Medicaid in 2014. In the second, I coded New Hampshire (expanded August 15, 2014) in addition to Michigan as having expanded Medicaid in 2014. Third, I changed the Medicaid expansion variable to consider all states that implemented expanded coverage between January 1, 2014 and June 30, 2015 (29 states) as having expanded. Lastly, I further extended the Medicaid expansion variable to consider all states that implemented expanded coverage between January 1, 2014 and June 30, 2016 (31 states) as having expanded. Results were substantively similar, except that in the second specification, coverage of MATs and the interaction term between Medicaid expansion and coverage were marginally significant at $p = 0.067$ and $p = 0.069$, respectively.

DISCUSSION

This study combined longitudinal data from the Adoption and Foster Care Analysis and Reporting System with state-level sociodemographic and health data to assess the extent to which Medicaid expansion and generosity are associated with reunification among children who entered the foster care due to parental substance use. Results from multilevel event history models indicated that the association between

Medicaid generosity (specifically, coverage of medication-assisted treatments) and reunification was conditioned by Medicaid expansion status. In states that expanded Medicaid, greater coverage of MATs was positively associated with the likelihood of reunification, but the opposite was true in states that did not expand Medicaid. An alternative interpretation is that coverage of MATs conditioned the association between Medicaid expansion and reunification such that Medicaid expansion was only positively associated with reunification when coverage of MATs was above-average. Medicaid scores, a more general measure of Medicaid generosity and accessibility, were not associated with reunification. This study supports the findings of LaBrenz and colleagues (2021), who also did not find an overall association between Medicaid expansion and the likelihood of reunification in their analysis of AFCARS data. This study builds on these findings by using a modeling strategy that takes into account time to reunification and considers how other aspects of Medicaid interact with expansion status to predict reunification.

One reason that Medicaid expansion may not have been more strongly associated with reunification among children removed from the home due to parental substance use is because Medicaid expansion only improved the availability of private substance use treatment programs, which make up only 10% of the treatment system (Abraham et al., 2021). Why the association between coverage of medication-assisted treatments and reunification was negative in non-expansion states could be due to a few, potentially overlapping reasons. First, caseworkers and judges may perceive that medication-assisted treatment is widely available in states with greater Medicaid coverage of these treatments. However, if parents cannot access this treatment due to logistic barriers like lack of insurance, caseworkers and judges may perceive parents as noncompliant in their case plans, reducing their chances of reunification (Reich, 2005). Second, and relatedly,

some caseworkers and judges have negative views of MATs, perceiving them as another type of addiction that is incompatible with successful parenting (Radel et al., 2018). This perception may be more prevalent in states where these treatments are more widely available (even if low-income parents are not able to access them). Lastly, parents likely have several unmet needs – not only substance abuse, but also mental healthcare and primary healthcare. Meeting these needs simultaneously is associated with a greater likelihood of reunification (Choi & Ryan, 2007). When parents can access other types of healthcare in addition to substance use treatment in states that expanded Medicaid, the positive effects on reunification may outweigh any factors that cause coverage of MATs to be negatively associated with reunification.

Unlike two recent studies analyzing state-level predictors of reunification using the AFCARS data (LaBrenz, Fong, & Cubbin, 2020; LaBrenz et al., 2021), I found significant associations between state-level health and structural factors and reunification. Specifically, greater opioid dispensation rates and a greater percentage of adults with a bachelor's degree or higher were negatively associated with reunification. This discrepancy in results between studies may be due to differences in the measurement of variables, as well as the fact that the current study utilized event history modeling that accounted for censoring and the length of time to reunification, whereas the other two studies did not. States with greater opioid dispensation rates may have a greater supply of opioids available in illegal markets, which may hinder parents' attempts to recover from addiction. It is unclear why children living in states with a better-educated population would have a lower likelihood of reunification; one possibility is that these states have more parents willing to adopt (Chandra, Abma, Maza, & Bachrach, 1999).

Limitations

Like all studies based on observational data, the conclusions of this study cannot be interpreted as strictly causal. One possibility would be to conduct state fixed-effects models to compare reunification rates within states before and after Medicaid expansion. However, because HLM software cannot accommodate time-varying variables at the state level, I could not examine how change in Medicaid expansion status within states shaped reunification outcomes. Furthermore, a state fixed-effects model would not allow for the investigation of time-invariant state and individual characteristics that predicted reunification. Thus, while not perfect, the modeling strategy used here has some important advantages over methods that might be stronger for causal inference. Another limitation of this analysis is that the AFCARS data does not distinguish between the specific drugs associated with the child's removal. There may be variation in reunification rates by substance type; for example, in a study of foster care children in a Midwestern state, children whose parent(s) used methamphetamine were the least likely to reunify compared to other substances (Lloyd & Akin, 2014). Variation in the type of drugs most commonly abused in a state may be an omitted variable that would account for these results; future research should test this possibility. Relatedly, the AFCARS does not mandate a consistent measurement of substance use. Jurisdictions vary in how they identify substance use, e.g. assessment by the caseworker, a toxicology screen, or assessment by a licensed substance use counselor (Seay, 2015). Thus, reunification rates among children who entered foster care due to parental substance use may differ if states differ on what types of cases get categorized as involving parental substance use. Another measurement issue is that the Medicaid scores used in this analysis are over a decade old and thus may not completely accurately reflect the generosity of states' programs; however, there is no other more current and comprehensive measure of Medicaid

program quality available. Finally, if a child moves states while in foster care, they do not keep the same ID across states and thus are impossible to link. However, if a foster care child moves out of state, it is likely because they have been adopted or moved to an institutional setting, rather than being reunified, and are thus censored in the data as would be appropriate.

Conclusion

Taken together, the results of this study suggest that improved access to medication-assisted treatments (MATs) as well as healthcare more generally can promote reunification among children who entered the foster care system due to parental substance use. These findings contribute to a small body of evidence that MATs improve the likelihood of reunification among substance-using parents and their children (Hall et al., 2016), with the caveat that MATs may only be helpful in a broader context of improved healthcare accessibility. Child welfare agencies and substance use treatment programs should collaborate to better understand barriers to service among clients, ensure accessibility, and promote supportive relationships between clients and providers. Despite the sometimes adversarial relationship between child protective services and parents (Roberts, 2008), women in substance use treatment report feeling grateful to child welfare workers for providing instrumental support and accountability while working towards recovery and reunification (Falletta et al., 2018). However, women also report feeling that the expectations of child welfare workers are unrealistic (Falletta et al., 2018) and many parents face logistic barriers (e.g., transportation difficulties, unreliable childcare, and scheduling conflicts) to mandated substance use treatment (Reich, 2005). These barriers are not insurmountable and can be better addressed when parents, caseworkers, and substance use treatment counselors are all meaningfully involved in the

recovery and reunification process. Ensuring timely access to substance use treatment is also particularly important for addressing racial disparities in rates of reunification (Osterling, Lee, & Hines, 2012). Beyond substance use treatment specifically, policies that promote the accessibility of general healthcare, such as affordable options for health insurance and generous Medicaid service reimbursements, can have spillover effects that improve outcomes among families involved in the child welfare system.

Chapter 5: Conclusion

Summary of Study Aims and Major Findings

Parental substance can, but does not always, lead to involvement with the child welfare system. Increases in parental substance use-associated foster care entry rates in recent years could be due an increase in problematic parental substance use, but also a greater likelihood of substance-using caregivers coming into contact with the child welfare system than in the past. The goal of this dissertation was to analyze how historical change in the epidemiology and professional understandings of substance use, as well as geographic variation in policy environments and service availability, shape trends in children's entry into foster care due to parental substance use and the likelihood of reunification among these children. The first study examined how rates of substance use-associated foster care entry over time differed by age, race/ethnicity, and level of urbanization. The second study identified county- and state-level sociodemographic, health, and policy factors that contributed to geographic variation in these trends. The third study analyzed how Medicaid expansion and coverage of medication-assisted treatments were associated with the likelihood of reunification among children who entered foster care due to parental substance use.

Findings from this dissertation indicate that, like previous research has demonstrated, the opioid epidemic has played a significant role in the recent increase in substance use-associated foster care entries. Groups disproportionately impacted by the opioid epidemic – white and American Indian/Alaska Native families living in rural areas – also have disproportionately high rates of substance use-associated foster care entry. The contextual effect of opioid availability on reunification rates also suggests that the opioid epidemic influences child welfare outcomes not only through parental substance

use, but also authority decision-making. For example, reunification rates are lower in states hit harder by the opioid epidemic perhaps because caseworkers are less certain that caregivers will be able to successfully maintain their recovery. Findings from this dissertation also reveal racial and class disparities in substance use-associated foster care entry rates that do not align with trends in the opioid epidemic. For example, despite rising rates of opioid usage and mortality among Black Americans (Lippold, Jones, Olsen, & Giroir, 2019), substance use-associated foster care entry rates among these children are declining. These findings suggest that racial/ethnic, age, and geographic disparities in substance use-associated foster care entry rates cannot be solely attributed to differential substance use rates across these groups. Rather, whether parental substance use leads to foster care entry (and later reunification) depends on a series of decisions by professionals inside and outside the child welfare system – decisions which vary by time and place. This dissertation shows that geographic variation in child welfare, healthcare, and drug use policy contribute to differences in substance use-associated foster care entry rates and the likelihood of reunification among these children, sometimes in unexpected ways. Some policies ostensibly promoting uptake of substance abuse treatment, such as greater funding of medication-assisted treatment and targeted programs for pregnant women, were counterintuitively associated with greater substance use-associated foster care entry rates. These findings suggest that countervailing forces of greater surveillance and greater access to treatment– which are mediated through authority decision-making – interact in complex ways to shape entry into foster care and subsequent reunification. In the following paragraphs, I summarize these major themes present in greater detail and discuss their implications for policy and practice.

MAJOR THEMES

Opioid Epidemic and the Child Welfare System

All three studies demonstrate how the opioid epidemic is linked with child welfare outcomes – shaping not only children's risk of entry into foster care, but also their likelihood of reunification as well. The first study showed that growth in substance use-associated foster care entry rates was highest among white children, American Indian/Alaska Native children, infants, and children in rural areas. White infants across all levels of urbanization and American Indian/Alaska Native children of all ages in rural areas in particular had the largest growth rates. These trends parallel the much-documented growth in opioid overdose and addiction among whites (Case & Deaton, 2015), but also the less-discussed growth among American Indian/Alaska Natives as well (Tipps, Buzzard, & McDougall, 2018).

The lower growth in substance use-associated foster care entry rates among Black, Hispanic, and Asian children, particularly in urban areas, may be due to lower rates of opioid usage among parents in these populations, but this is likely not the only explanation. Morbidity and mortality related to opioids are also on the rise for these groups (Fine, Herzberg, & Wakeman, 2020), particularly Blacks in urban areas who are disproportionately at risk of overdose related to synthetic opioids (Lippold et al., 2019). Instead, the relatively lower growth in foster care rates among these groups may represent less attention paid to parental substance use by child welfare agencies and healthcare settings, either to these groups in particular or in general. For example, Black, Hispanic, and Asian children and mothers may be less likely to be screened for drug use in a healthcare setting because they do not conform to stereotypes about the modal opioid user. Alternatively, these groups may live in areas where there is less attention to parental

substance use overall, due to a lack of child welfare resources and/or relatively less concern about opioids (Smith, Kay, & Pressley, 2018).

Findings from the second study support the notion that opioid usage has driven increases in substance use-associated foster care entry rates. At the county level, opioid dispensation rates were positively associated with baseline substance use-associated foster care entry rates in 2005 and 2009, as well as with growth of rates between 2009 and 2018. To put these associations in perspective, the substance use-associated foster care entry rate in 2018 for a county with an opioid dispensation rate at the 80th percentile (2.16 entries per 1,000 children) was twice as large as the same rate for a county with an opioid dispensation rate at the 20th percentile (0.99 entries per 1,000 children). This association may be due to at least two reasons. First, and more directly, a larger supply of opioids in a community may lead to greater misuse and a greater risk of child welfare involvement. Second, a larger supply of opioids may be a proxy for greater mortality and morbidity related to opioids, as well as greater levels of psychological distress and chronic pain in a community. Third, in areas harder hit by the opioid epidemic, child welfare workers and healthcare professionals may be more likely to screen for opioid usage and intervene more aggressively when opioids are involved.

Lastly, the third study demonstrates that geographic variation in the severity of the opioid epidemic influences the likelihood of reunification in addition to foster care entrance: a greater opioid dispensation rate in a state was associated with a lower likelihood of reunification. Specifically, for a one standard deviation increase above the mean opioid dispensation rate, the odds of reunification were reduced by 86.8%. In states more affected by the opioid epidemic, caseworkers and judges may be more hesitant to allow children to reunify if they believe that a parent may easily relapse. Particularly if these areas also have high foster care caseloads and a shortage of accessible, high-quality

substance abuse treatment programs, caseworkers may be more likely to pursue adoption rather than spend a large amount of time working with parents to address their substance abuse.

A major limitation of the AFCARS data is that it does not contain data on the specific substances that parents used that led to a child's removal. Thus, it is impossible to say with certainty the extent to which an individual parent's usage of opioids in particular, as opposed to other illicit drugs, increases their likelihood of child welfare involvement. However, I argue that the fact that contextual variables play such an important role suggests that even if these trends are not driven directly by greater opioid use among parents, they still may be driven by professional perceptions that parents are at risk of opioid usage before and after their children enter the foster care system.

Race and Class Disparities

How the child welfare system reflects and reproduces existing social inequalities is a major theme running through this dissertation; all three studies examine, either at the individual or county level, how class and race matter for children entering the foster care system due to parental substance use.

Much has already been said in the research literature and media regarding the disproportionate effect of the opioid crisis on white families, which is reflected here in the overrepresentation of white children in substance use-associated foster care entries. However, this dissertation calls attention to how American Indian/Alaska Native families are also struggling in the midst of the opioid epidemic. The first study showed that American Indian/Alaska Native children are clearly over-represented in foster care entries associated with parental substance use. This overrepresentation in part may reflect high rates of poverty, unemployment, lack of adequate housing, and social isolation

among American Indian/Alaska Native families (Whitney Mauer, 2017), all of which put them at greater risk of substance use, child maltreatment, and coming to the attention of the child welfare system, particularly for neglect. American Indian/Alaska Native children are also less likely to reunify compared to white children. In particular, little research examines what predicts reunification specifically among American Indian/Alaska Native children and what factors contribute to their reduced likelihood of reunification compared to white children (Landers & Danes, 2016). One reason for the disparities at both the points of foster care entry and reunification is the lack of trust between caseworkers, judges, and American Indian/Alaska Native families. Given the historic injustices committed against these families by the federal government and the child welfare system, including the forced removal of their children without sufficient cause, it would not be surprising if these parents struggle to trust caseworkers and comply with case plans, particularly if they are excluded from the case planning process. This distrust, although justified, puts American Indian/Alaska Native families at a disadvantage both when trying to retain custody of their children and regain it once a child has been removed to foster care, given that caseworkers look for evidence of compliance and cooperation in their decision-making process (Wulczyn, 2004; Reich, 2005). On their end, caseworkers and judges may harbor negative, though unconscious, beliefs about American Indian/Alaska Native families.

Although Black children have been historically over-represented in the child welfare system, the first study showed that they are under-represented, and increasingly so, among foster care entries due to parental substance use. Substance use-associated foster care entry rates are in fact declining among Black families in large metropolitan areas. This finding is in line with two other studies show that Black children are less likely to enter the foster care system in states with large Black populations (Foster, 2012;

Russell & Macgill, 2015). However, it is unclear the extent to which these results represent an actual decline of substance use and maltreatment among Black families or declining child welfare attention and services for Black families in need. This finding may also reflect that Black children with substance-using parents at risk of foster care entry are being increasingly diverted to other systems, like the juvenile justice system and informal kinship care (Roberts, 2002). In order to test these hypotheses and ensure that Black children are receiving equitable treatment, future research should investigate at what decision point these disparities are occurring – e.g., at the reporting stage, the screening-in stage, the substantiation stage, or the removal stage. Despite the lower rates of foster care entry, once in foster care, Black children who enter due to parental substance use are less likely to reunify than white children. This finding may be due to greater rates of poverty, incarceration, and single-parent households among Black families, as well as lower access to substance abuse treatment programs (LaBrenz et al., 2021), suggesting that Black families in the child welfare system are still not receiving the resources they need.

Prior studies have shown that poverty, unemployment, and income inequality are all robust predictors of higher rates of maltreatment and foster care entry, both at the individual and community level (Coulton et al., 2007; Eckenrode et al., 2014; Drake & Jonson-Reid, 2014) Analyses of class disparities using the AFCARS are constrained by the limited number of variables included in this data. Although the AFCARS is ideal for calculating disparities in foster care entry due to its inclusion of the entire foster care population, it lacks detailed information about the child's caregivers and living situation prior to foster care. It is impossible to calculate rates of foster care entry by parental income or level of education, for example, as states do not report this information. Instead, I use contextual measures of socioeconomic status, like county level of poverty,

unemployment, educational attainment, and income inequality, to analyze how entrance into foster care due to parental substance use and later reunification differs by class status. As expected, greater county-level poverty was associated with higher rates of substance use-associated foster care entry in 2005, and a greater percentage of adults with a bachelor's degree was associated with lower rates in 2009. Other socioeconomic variables, however, did not operate as expected. Although a greater Gini index (i.e., greater income inequality) was positively associated with these rates in 2009 as expected, in 2005 the association was the reverse. Perhaps in 2005, greater income inequality reflected a greater availability of high-quality services and programs that could be protective for families even with low incomes. Conversely, following the Great Recession in 2009, greater income inequality represented greater stress, like housing insecurity and job loss, which could lead to problematic substance use. Also unexpectedly, higher unemployment was negatively associated with substance use-associated foster care entry rates in 2009. It may be that unemployed parents have more time to spend with their children, which would be protective against neglect (Raissian, 2015). Alternatively, in the context of the Great Recession when millions lost their jobs, unemployment was associated less with other risk factors that would typically predicted foster care entrance. These findings suggest that contextual socioeconomic variables are not simply proxies for the risk of maltreatment, but also influence foster care entry through other processes like caseworker decision-making and availability of resources.

Socioeconomic factors, however, were generally not associated with reunification. It may be that the level of analysis (state) was too large for detecting effects related to socioeconomic status, as caseworkers and judges may make decisions based on a family's level of resources relative to other families in the area. However, one contextual variable predicted reunification: the percentage of adults with bachelor's

degree or higher in a state was negatively associated with the likelihood of reunification. One possibility is that these states also have a greater number of families who agencies would regard as attractive potential adoptive families for these youth, thus making reunification less likely.

In sum, these results show significant race- and class-based disproportionality in foster care cases associated with parental substance use. Race and class are, of course, inextricably intertwined, but racial disparities in the foster care system are likely not solely attributable to differences in class. Instead, race and class, along with other characteristics like nativity and disability status, intersect in differing ways over time and place to determine access to resources, availability of support, and treatment by healthcare, criminal justice, and child welfare systems.

Policy Environment and Service Availability

Throughout these three studies, policy context and availability of services emerged as consistent predictors of substance use-associated child welfare outcomes, but not always in a straightforward way. Two critical factors that have not yet been widely explored in research on child welfare outcomes is whether or not a state expanded Medicaid coverage to low-income adults following the Affordable Care Act and the generosity of states' Medicaid programs, particularly coverage of medication-assisted treatments (MATs) for substance abuse. In the second study, counties in states that expanded Medicaid and had a more generous Medicaid program had lower growth in substance use-associated foster care entry rates between 2009 and 2018. The association between coverage of MATs and these rates, however, differed by year. Greater MAT coverage was negatively associated with rates of substance use-associated foster care entry in 2005, but positively associated with growth in these rates between 2009 and

2018. Regarding reunification outcomes, examined in the third study, greater MAT coverage was associated with a greater likelihood of reunification in states where Medicaid expanded, but negatively associated with reunification in states without a Medicaid expansion. (Sensitivity analyses for the second study revealed no variation in the association between MAT coverage and growth in substance use-associated foster care entry rates by Medicaid expansion.)

These conflicting results demonstrate the double-edged nature of healthcare access and availability for substance-using parents. On the one hand, affordable preventative healthcare can help parents manage their health and avoid the need for opioids (e.g., by addressing pain related to an untreated illness or injury). In addition, substance abuse treatment can help them avoid initial contact with the child welfare system by addressing their substance use before it becomes problematic enough to be noticed by a mandatory reporter, usually a healthcare professional. On the other hand, greater healthcare access may increase by putting substance-using parents in greater contact with mandatory reporters (Puls et al., 2020), particularly in the context of universal drug screening of mothers and infants (Roberts, 1999). These results showed an increase in the likelihood of foster care entry with greater Medicaid coverage of MATs specifically. Although MATs are an effective form of substance abuse treatment, many judges perceive the usage of MATs as a form of drug addiction that is incompatible with effective parenting (Radel et al., 2018). As the opioid epidemic accelerated in the late 2000s and 2010s, this perception may have become more common. The positive association between MAT coverage and the likelihood of reunification only in states where Medicaid was expanded may suggest that MAT availability is most helpful for parents trying to reunify when combined with greater healthcare access overall.

This double-edged sword of surveillance versus access can also be seen in the results regarding policies on substance use during pregnancy and growth in substance use-associated foster care entry rates in the second study. In this study, I examined five of these policies: two encouraging greater detection and reporting of substance use during pregnancy and three supporting pregnant women's access to substance use treatment programs. I hypothesized the former policies would be associated with greater growth in substance use-associated foster care entry rates, but only the requirement to report substance use during pregnancy was positively associated with growth in these rates, whereas the association with required testing for suspected substance use among pregnant women was negative. Between 2009 and 2018, however, the association between required testing for suspected substance use and growth in rates was positive. I hypothesized that the latter three policies for pregnant women – priority access to substance use treatment, targeted substance abuse treatment programs, and protection from discrimination in substance abuse treatment programs– would be associated with lower growth in substance use-associated foster care entry rates. Priority access and targeted programs for pregnant women were associated with an increase in rates between 2005 and 2009, while protection from discrimination was associated with a decrease in rates during this time period. Taken together, these results suggests that the countervailing forces of greater surveillance and greater access interact in complex ways to influence whether or not substance-using parents come under the purview of the child welfare system. One caveat in interpreting these results is that the AFCARS does not identify a child's county if the county had fewer than 1,000 foster care caseloads that year. Thus, results are generalizable only to counties with larger populations and/or caseloads.

Although the first study did not directly examine policy context or service availability, the disparities between urban and rural areas may reflect geographic differences in these factors. The lower growth in metropolitan areas may be due to a greater availability of substance abuse treatment compared to rural and non-metropolitan urban counties (Belanger & Stone, 2008). Alternatively, rural areas, particularly those in the South with a large proportion of Black residents, may have disproportionately low foster care entry rates due to families' lack of contact with healthcare providers and other social service professionals (i.e., mandatory reporters) and underfunded child welfare services (Smith et al., 2018).

IMPLICATIONS FOR POLICY AND PRACTICE

The results from each of these three studies reveal a concerning state of affairs for families struggling with substance use. The number of children who have entered foster care due to parental substance use has more than doubled between 2001 and 2018. Among these children, 85% will remain in foster care for more than a year after their entry. Below, I offer several suggestions for policy and practice aimed at reducing the number of children entering foster care due to parental substance use and increasing their likelihood of reunification.

First, Medicaid should be expanded to low-income adults who currently fall in the so-called coverage gap (Rosenbaum & Wilensky, 2020). In addition to facilitating access to substance abuse treatment for parents, Medicaid expansion would improve overall healthcare utilization and decrease poverty (due to lower out-of-pocket expenses for healthcare), all of which would also lower child maltreatment rates (Brown et al., 2019). Second, States' Medicaid programs should cover all FDA-approved drugs for medication-assisted treatment. For example, eight state Medicaid programs do not

reimburse costs for methadone (Substance Abuse and Mental Health Services Administration, 2018), despite it being a relatively safe, inexpensive, and effective treatment for opioid use disorder. Third, together with this greater coverage, information campaigns are needed to encourage greater acceptance of MATs among legal and child welfare professionals. More aggressive policy is also possible: the Obama administration proposed eliminating federal funding for state drug courts who refused defendants access to MATs (Davies, 2015). Fourth, states should put in place policies that facilitate access to substance abuse treatment programs for pregnant women, such as laws prohibiting discrimination and the creation of specific targeted programs for this population. The counties in states with policies that increased substance use treatment, but did not require testing for suspected or reporting prenatal drug use, had the greatest declines in substance use-associated foster care entry rates between 2005 and 2009. Fifth, doctors should verbally screen all women who are planning to become pregnant for substance use for and refer them to treatment. It is important that women feel safe to be honest about their substance use without fear of being reported to child protective services; being able to address their substance use prior to pregnancy would help them avoid later involvement. Sixth, caseworkers should work to improve trust between them and their clients. This could involve ensuring that parents take an active role in creating case plans, providing support for accessing services (e.g., transportation and childcare), and communicating directly with clients about their needs and barriers to case plan compliance (Kokaliari, Roy, & Taylor, 2019). Lastly, prescription drug monitoring plans (PDMPs) are a widely-endorsed tool for combatting the opioid epidemic by limiting overprescribing and reducing illegal opioid diversion. One study found that PDMPs have had some limited success in reducing foster care entries (Gihleb, Giuntella, & Zhang, 2019), but overprescribing is only one factor driving the opioid crisis. Furthermore, a single-minded

focus on supply-side factors ignores more fundamental causes driving parental substance use, such as limited economic opportunities (particularly among those formerly incarcerated), untreated chronic pain resulting from substandard healthcare access and hazardous work conditions, and social isolation (Dasgupta, Beletsky, & Ciccarone, 2018). In other words, in order to address the increasing numbers of children entering the foster care system to parental substance use, policy must also address the root causes leading to problematic substance use in the first place.

CONCLUSION

This dissertation contributes significantly to the literature on the opioid epidemic, the child welfare system, and the effects of drug and healthcare policy on families. It contextualizes ecological perspectives on professional decision-making, child maltreatment, and foster care within a specific historical moment (the opioid crisis) and across varying policy environments. Using methods drawn from sociology, demography, and psychology, this dissertation demonstrates that entrance into foster care due to parental substance use varies considerably by time and place. Furthermore, these contextual variables shape the likelihood of reunification among this foster care population. Ultimately, reducing the number of children who enter and remain in foster care due to parental substance use will require a multi-faceted approach across multiple systems in the United States, involving policymakers, practitioners, and other professionals in healthcare, criminal justice, social services, and child welfare.

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